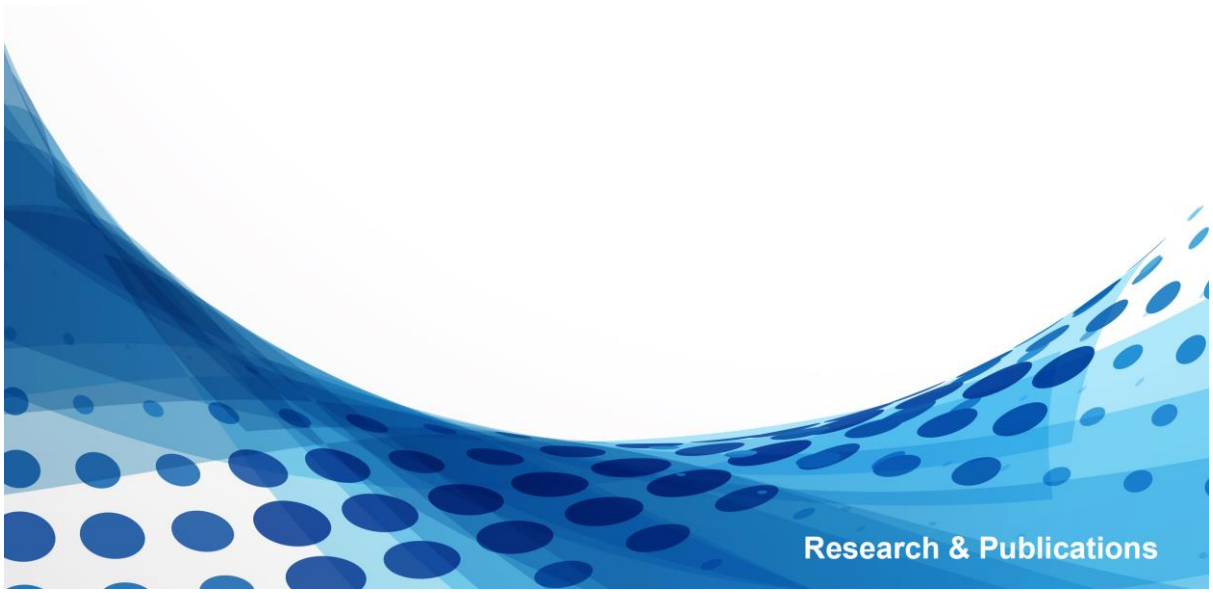
INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD

IIMA
Working Paper

Public-Private Partnership (PPP) in Indian Railways: Models, Framework, and Policies

Sitharamaraju K
Beerelli Santhosh Kumar
Saket Anil Yelne
Sundaravalli Narayanaswami



Research &
Publications

W. P. No. 2020-12-05

Public-Private Partnership (PPP) in Indian Railways: Models, Framework, and Policies

Sitharamaraju K
Beerelli Santhosh Kumar
Saket Anil Yelne
Sundaravalli Narayanaswami

December 2020

INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD

Public-Private Partnership (PPP) in Indian Railways: Models, Framework, and Policies

Introduction

Indian Railways has been the backbone of India's public transportation network for many decades. The IR network is among the world's most complicated, most comprehensive, and continually increasing web-network. Indian Railways is one of the crucial ministries of the Government of India with the mandate to provide economic and efficient rail transportation in India to achieve the twin goals of **economic integration and regional development.** Indian Railway is a monopoly which employs about 12.27 Lakh employees and owns about 65000 RKMs track line. Every day IR plies about 13452 passengers trains daily. It transported about 844 Crores passengers with an average lead of 137.1 Kms in the year 2018-19. Further, as per the 2018-19 IR yearbook, IR plies about daily 9100+ goods trains and transported about 1227 million tons of Goods/Bulk transporter. Indian Railways every year cater to almost 15% of Passenger traffic and 35% of Goods Traffic as of 2018.

Organizationally, IR has been divided into 17 Zones and actively runs Mumbai, Kolkata, and Chennai Metro railways along with a vast number of long-distance passenger trains. IR, with the help of Act of Parliament, has the right of way rights and a massive land bank in different metro cities which is yet to be tapped efficiently.

A simple study on the comparison of Costs between Rail, Road, and Waterways by NITI AAYOG is presented below. This cost of Railways was, in fact, after the advance effect of cross-subsidization with passenger movement.

Table 1 - Comparison of Cost of Freight among Different Transport Modes Source: Niti Aayog report "Goods on Move," 2018

Type of Transport	Cost of Freight per ton-km
Roadways	Rs. 2.58
Railways	Rs. 1.41
Waterways	Rs. 1.06

From the above, It was established that Railways are the most economical and competitive mode in the transport sector and the dominant transportation mode in the Long-distance transport of Freight and Passengers and the Urban bulk transporter in Metro cities. The modal shift in transportation from Roadways to Railways will bring in much-needed efficiency to cost savings. However, it entails the huge initial CAPEX cost.

Traditional Railway way of Infrastructure Creation

IR was facing enormous challenges at the end of the year 2014, with a vast number of projects under pipeline with meager allotments to them because of a lack of financial closure for the same. It was, in turn, resulted in huge time and cost overruns for the said projects. One crucial problem is the decision making in investments, which is controlled mainly by political biases. Till then, the way Railway operates can be described in the following manner.

1. The line capacity and connectivity enhancement with large infrastructure projects are taken up in-house by the construction wings of the Zonal Railways. Slowly the same was moved to the way of SPV mode such as DFCs. Railway public sector undertakings have given the task of either constructing or driving them. The annexure on DFCCIL succinctly explains the project motivation and funding models.
2. The requirements of investments in ICDs, Cold Chains are generally taken care of CONCOR and its subsidiaries. The parcel business, with the help of Goods Sheds, was found to be decreasing in revenues & found to be inadequately equipped for customer needs because of a lack of adequate investments. Though the container operations are opened up for private operators, the investments attracted is far below the

expectations. The annexure on CONCOR briefly explains the contribution of CONCOR towards capacity expansion.

3. The rolling stock financing was done mainly through IRFC through Financial Leasing Model. The annexure on IRFC functioning summarizes the approach. Currently, about 80% of Rolling stock is the assets of IRFC. The only other way of investments in Rolling stock is the schemes of Own Your Wagon schemes, Private Container operators and newly introduced Private run passenger trains. Annexures on Private run passenger trains and Concor on private Container oprerators have been made for the clarity on interaction of the same with IR.
4. The investments into Station and Land development of Railways was handled by Railway Land Development Authority and later by Indian Railway Station Development Corporation in SPV Mode. The annexure on the RLDA explains the progress made on the same briefly.

Having recognized the investment impact in Railways on Economic development, more so in the present context of import led Export growth development model embraced by the Government of India, erstwhile planning commission and Niti Aayog has presented an investment plan of about 8.5 Lakh crores, and the same was approved by the GOI - Government of India for the years 2014-19. The details as mentioned below,

Description of the Projects (Outlay in Crores)	**Plan for 2015-19**
Network Decongestion (including DFC + electrification, Doubling + electrification & traffic facilities)	199320
Network Expansion (including electrification)	193000
National Projects (North Eastern & Kashmir connectivity projects)	39000
Safety (Track renewal, bridge works, ROB, RUB, and S&T)	127000
Information Technology / Research	5000
Rolling Stock (Locomotives, coaches, wagons – production & Maintenance)	102000

Passenger Amenities	12500
High-Speed Rail & Elevated corridor	65000
Station redevelopment + logistic parks	100000
Others	13200
TOTAL	**8,56,020**

Table 2 Railways Investment Plan for 2015-2019 – Source: IRFC Lecture by Shri Vijay Kumar, IRAS, Ex-Financial commissioner of Railways on IRIFM Lecture Database

According to the investment plant of the previous table, F.Y. 2014-15 onwards, the Government of India has increased capital outlay for the Railways gradually. The following tables/graphs depict the amount and type of investments made by the government of India in Railways infrastructure.

Table 3 - Capital outlay in Crores - Source: PRS, Union Budget 2020-21 Analysis

Source of Funds	2018-19 Actuals	2019-20 Revised	2020-21 Budget
Gross Budgetary Support	52,838	68,105	70,250
Internal Resources	4,663	5,000	7,500
Extra Budgetary Resources	75,876	83,247	83,292
Total	**1,33,377**	**1,56,352**	**1,61,042**

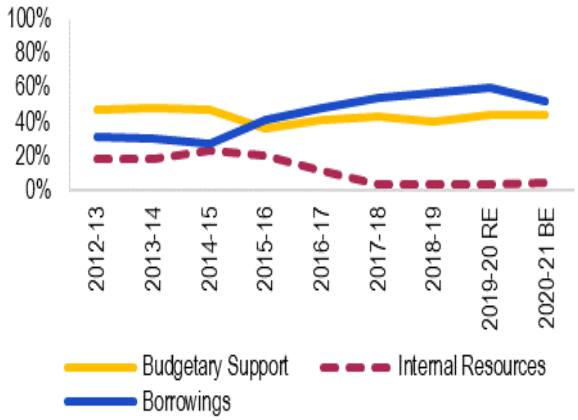


Figure 1 Components of Capital Outlay Source: PRS on Analysis of 2020-21 Union Budget

As per the committee's report for mobilization of Resources (2015) for major railway projects & restructuring of the railway ministry & railway board, the private sector can bring in capital & industrious management practices to aid reform the railways. The report also proposes that the private sector should be involved in procuring rolling stock, keeping given the in-house production capacity & demand requirements. The same was headed by the Sam Pitroda Committee report 2011, which recommended attracting private investment in various areas of railways such as stations & terminals, elevated rail corridors, high-speed rails, and private freight terminals, leasing of wagons, loco & coach manufacturing units, and so on.

According to the study of a draft policy for private participation in rail connectivity and capacity augmentation projects, a comprehensive draft policy containing six models for different specific categories of projects has been prepared basis the feedback and inputs from various stakeholders. These are generic models, and particular issues are attributed on a case-to-case basis. Considering the nature of the private investment Ministry of IR grants direct access or proceed for competitive bidding for award of the concession. In such models for private participation in rail-connectivity & capacity augmentation projects following stakeholders are involved/participate –

- State Government
- Ports
- Beneficiary industries
- Local bodies
- Co-operative societies & corporate bodies
- Infra & logistics providers
- Foreign Direct Investor & Other Investors

The participation from different bodies aimed towards fulfilling some of the critical objectives such as – Supplementing Government investments on account of private capital flows, For joint public good involvement of states in the development of rail infrastructure, to match-up supply-demand requirements development of rail transport capacity, and ensuring the availability of transportation needs in line with expected/projected GDP growth.

However, this new public-private partnership policy has added about 15500 crores in the last five years, but it stands pale, given the requirements forecasted. **According to the EY India study report on PPP in Indian Railways, a precipitous jump in private investment will be difficult in the present situation, where the IR in both the Operator & regulator.**

NITI AAYOG PAPER "Goods on the Move" – A Glimpse

In this context, NITI AAYOG paper "Goods on the move: Efficiency and Sustainability in Indian Logistics" has done a comprehensive review of the Logistics Sector in India in 2018. According to the report, the passenger transport business's social service orientation affects the IR's flexibility to function on commercial principles. Considering the nature of the operation, the railways have hurt consistent losses in the passenger transport business. Moreover, the cross-subsidization of lower fares for passenger commutes by higher freight fares has caused freight movement to road transport. As per the NTDPC report (2014) indicated that 59 percent of freight transport has moved from rail to road over the past five decades. Thus, to reverse the declining shift in freight transport from rail to road, numerous transformative measures have been initiated by Indian Railways prioritizing private partnerships and investments in areas such as rolling stock, freight corridors, etc. The bigger objective is to alleviate fiscal stress, enhance rail-systems through technology partnerships, and promote operational efficiency. Some of the important points of the report have been presented below.

1. World bank Research on Latin America on the impact of Logistics sector cost reduction on employment and consumer demand growth is presented.

    a. Plunging the Logistics costs in the final price of goods by 14% can increase the demand for those goods by 8%-18% and increase employment in that sector by 2.5%-16%. Such an impact is particularly important for the MSME sector.
    b. For Agricultural products, the reduction of logistics costs to 14% of final prices increased demand by 12% and increased agricultural employment by 6%.

2. As of 2017, on average, embodied logistics costs accounted for 18% of the final price of goods in India in comparison to Developed economies share of 9-10% of the final price of goods.

3. The comparison chart of different components of Logistics (as % of GDP) has been depicted below.

Item Description	India	Developed Countries
Transportation Costs	~7% of GDP	5-6% of GDP
Inventory Costs	~6.3 of GDP	2-3% of GDP
Admin Overheads	~0.7% of GDP	0.5-1% of GDP
Total Logistics	14% of GDP	8-10% of GDP

Table 4 - Comparison of Logistics Costs between India and Developed Countries

a. India was precisely similar to the USA situation as in 1982. From there, the logistic efficiency in the USA was made through the inventory cost reduction over the past three decades.
b. The sustained policy effort and investments are needed to bring in such kinds of efficiencies over time.

Niti Aayog has recommended for the emphasis on the connectivity, increase in the capacity enhancement of the Indian railways so that the modal share of the Railways in Freight transport to upwards of 50%.

Important Problems Identified and Solutions Recommended by the report

The most significant problems identified and the solutions possible were presented in the Niti Aayog paper under discussion.

Table 5 NITI AAYOG Report - "Goods on Move" - Problems identified & Solutions recommended

Problems	Solutions Proposed
Reducing Inefficiencies in Inventory Management	
Reducing inventory Loss	1. Improved quality and siting of warehousing. 2. Development of Cold Chain Networks for Agriculture and Perishable Goods. 3. One right way is to do inventory centralization by creating large distribution centers.

Eliminating excess inventory holdings	1. Build up digital capabilities to track inventory in real-time 2. Use technology to forecast consumer demand variance and lead times.
Reducing inefficiencies in Transportation	
Modal split of 59%:35%:6% between Road, Rail, and Waterways need to be changed to a more reasonable 35%:55%:10% as seen in advanced economies.	1. Increase in Rail Connectivity 2. Infrastructure capacity creation for Coastal shipments 3. Promoting double-stack clearance of key inter-modal corridors 4. Continue build-out of inter-modal logistics 5. Identify and address gaps in rail network connectivity.
Low truck efficiency and productivity	1. Continued investment into the road network, especially in last-mile connectivity. 2. Standardization of Logistics Practices
Low efficiencies in urban distribution	1. Parking and loading bays modernization 2. Truck routes and dispatch digitization 3. Consolidation Centers and Urban logistics Spaces

Source: Niti Aayog's paper on "Goods on the Move: Efficiency and Sustainability of Indian Logistics" in Global Mobility Summit, September 2018

Even Ministry of Housing and Urban Development guidelines on the New Metro rail policy on new PPP project guidelines. The railway infrastructure is an essential link with urban transit systems & also requires encouraging investment in suburban railways via special purpose vehicles (SPV) structures like Rapid Regional Transport Systems (RRTS). In a nutshell, both of them indicate the humongous amount of investments required in the Railway sector for the next few decades.

In order to achieve this, few big investment decisions have been taken by MOR in recent times. To name a few -

1. JVs with State Governments to muster additional capital for major projects such as DMRC,
2. PSU to leverage free reserve for raising debts and building assets
3. RIDF shall finance major projects, independent of the Railway Budget
4. Two DFC under commissioning by 2021-2022, three more in the pipeline.
5. Semi-High Speed trains on the golden quadrilateral
6. Average speed to increase to 50kmph for freight and 80kmph for passengers
7. 100 world-class stations, including 25 through IRSDA
8. 3500 km new BG lines, including 481 km in North East – 9.5 km per day
9. 4000 km electrification – 12.3 km per day – Target to 90% network
10. Mission 100 new freight terminals, Modernise goods shed through PPP
11. Freight trains to run on a pre-determined time table
12. Freight tonnage to grow from 1100 million to 2400 million by 2025 – 8.5% CAGR, thereby increase in Rail Market share in freight.
13. Full-fledged Railway University at Vadodara
14. Passenger trains speed to increase to 95 kmph
15. A policy of Private passenger train operators

Further, **NITI AAYOG has indicated the requirement of humongous investments of about 50 lakh crores** to fulfill the above-mentioned targets such as Station Development, Dedicated Freight Corridors – golden Quadrilateral, New/Strategic line investments, the improvements in Signal infrastructure, etc. As India still a developing country with a huge population, the Indian budget year on year had faced with higher and higher social service obligations kept budget allocations for such cause is always under strain. Hence huge investments to fulfill the above plan of action can only be made through by right choice of the PPP policies.

Having recognized the same, Smt. Nirmala Sitharaman, Finance Minister, in her maiden budget speech (2019), announced that the PPP – Public-Private Partnerships models would need an hour to bring about the faster development, including rolling stock manufacturing & the delivery of freight of the railways.

Public-Private Partnerships – A commentary

The Model of Public-Private Partnerships has come into existence by the introduction of Private Finance initiative projects initiated by the Government of Britain. Later the concept has been taken up by many Governments in the name of PPP. It can be defined as the following.

> "PPP is any medium-to-long term relationship between the public and private sectors, involving the sharing of risks and rewards of multi-sectors skills, expertise, and finance to deliver desired policy outcomes."
>
> - Standard & Poor

PPP generally brings inefficiencies in infrastructure projects construction & maintenance and brings in additional resources through private funding (often international investments). Further, PPPs minimize the risks for the Government Agencies. Often brings in technological innovations as well, thereby greater efficiencies. However, we need to be careful that public monopolies should not be replaced with private monopolies.

PPP – Stakeholders & Risks Allocation

In a Private-public partnership, there generally exists the following four stakeholders who have the critical role to play and a different set of risks they will bear for the successful provision of the public good.

1. Principal - Government State / Center
2. Developer
3. Consumers
4. Lenders

Though in the above category of Developers – we can largely subdivide them into three as Sponsors, Constructors, and Operators because of the differences of Risk bearing, and often all three entities merged into a single one as a developer in the most of the PPP contracts. The following diagram gives a snapshot view of the relationship between each of the stakeholders in the process of PPP.

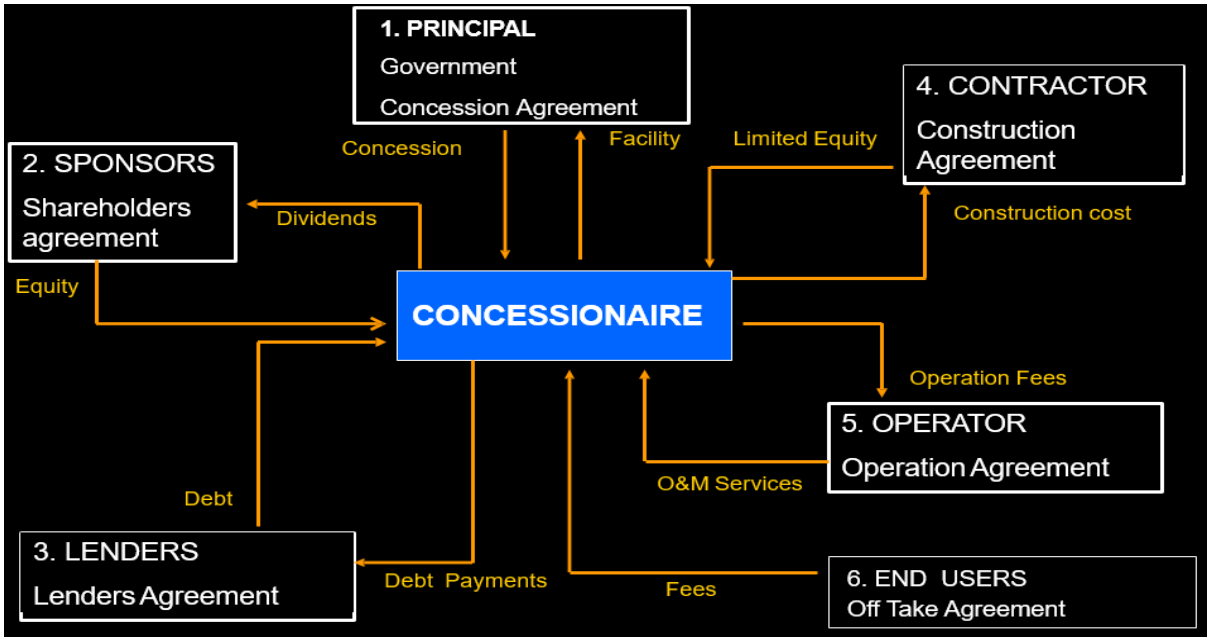


Figure 1 Stakeholders in PPP agreements Source: IRIFM Lecture database by Shri Yogendra Sharma, Ex-MD Kutch Railway

Stakeholders' perspectives Summary

1. Developers Perspective on Challenges –
    a. Delays in Clearance/Approvals (Land acquisition, Environment & forest). Land acquisition is recognized as the single largest roadblock for infrastructure development.
    b. The financial health of the developer is often key for successful financial closure and, thereby, the successful execution of the projects. The stressed NPAs and thereby stress in bank lending also often lead to a lack of access to financial resources or high-interest rates.
    c. Underperformance due to lack of skilled workforce and other construction equipment.

2. Governments Perspective on Challenges –
    a. A shortfall in multiple fronts such as Financing of Assets, Construction of assets due to land acquisition delays, maintenance of assets due to inadequate monitoring mechanism, independent regulators to cater to the needs of PPP.
    b. Capacity constraints on PPP knowledge, MIS and knowledge management initiatives, unreasonable emphasis on inputs rather than outcomes.
    c. Limited acts/regulations/guidelines – such projects are successful only in 3 sectors of Power, roads, and telecom.

3. Lenders Perspective on Challenges –
    a. Stress in public sector banking, coupled with RBI norms on infrastructure lending, made them risk-averse to PPP.
    b. Sectoral Funding requirements coupled with activist bureaucratic/political policy flipflops have led to larger NPAs in sectors such as Power.
    c. Developers often tend to overestimate the profits or underestimate the risks involved with such projects, often led to NPAs. Lenders should be explicitly protected even in the failure of the Developers after the completion of the projects. Most of the time, State governments often lack the big picture.
    d. Foreign currency fluctuations and unfavorable bond market scenarios often make Lenders jittery to lend more money to the Infrastructure sector.

4. Consumers/End-user perspective on Challenges – The consumer always insists on lower cost for a better quality of the services rendered after the PPP. This situation mandates the presence of adequate healthy competition for such PPP projects.

Our model concessionaire document should adequately take care of the above perspectives. The concessionaire agreement should take care of the uniformity in the costs of the developers across the projects, and the discretion possibility should be as minimal as possible.

Different models of the PPP that are in vogue are briefly explained in the Annexure – 1 of this project report. To summarize each of the PPP model types and the revenue streams associated with it, the following table is presented.

Type	**Revenue Stream**
User-Fee Based BOT Models	User charges (roads, airports, etc.)
Annuity Based BOT Models	Equated payments (installments) over project life-cycle (rural, health, education, etc.)
Performance-Based Management/Maintenance Contracts	Improving efficiency and benchmarking payments to service standards (water, SWM, etc.)
Modified Design-Build (Turnkey) Contracts	Payments linked to tangible construction milestones (not lump-sum payments) with incentives for early completion
Hybrid Annuity Model	A mix of annuity and user fee

Figure 2 - PPP Type and Revenue Stream expected: Source – Lectures of Sharmila Chavaly in the IRIFM Database

.PPP Responsibility matrix for Private (P) and Government (G)

PPP Models/ Responsibilities	**BOT (Toll)**	**BOT (Annuity)**	**HAM**	**DBFOT**	**O & M**	**BOOT**	**DBOT**
Ownership	G	G	G	G	G	P	G
Financial	P	P	P/G	P	P/G	P	G
Construction	P	P	P	P	P	P	P
Design or Technical	P	P	P	P	P	P	P
O& M	P	P	P/G	P	P/G	P	P
Traffic revenue collection	P	G	G	P	P	P	P

Cost Overrun	P	P	P	P	P	P	P
Time Overrun	P	P	P	P	P	P	P
Political risk	G	G	G	G	G	P	G

Figure 1 Private vs. Government Responsibility Matrix in PPP Model - Source: Volume 05, Issue 1, [January– 2018] ISSN (Online):2349–9745;

Though we have simplified the terms and models for this report, There are numerous variations of PPP projects taken up all over the World. For the sake of completeness, we have incorporated an annexure dedicated to the explanation of those terms along with Case study/examples for each type.

In the context of Indian Railways, How Railways have implemented different Public-Private Partnership projects have been presented in the following section.

Models and Policy framework in Indian Railways

Indian Railways (IR) over the years has modified the PPP model. Non-Government Railway Model is the only Model allowed until December 2012 for Rail-Port connectivity projects. R3i Policy of 2011 did not enable last-mile rail connectivity on the NGR model to other than seaports. As part of the 2012 PPP policy, the following five models have been allowed.

1. Non-Govt. Lines Model on revenue sharing
2. Joint Ventures Model on revenue sharing
3. Built Own Operate and Transfer Model on revenue sharing
4. Annuity Model of fixed fee recovery basis
5. Customer Funded Model on discount on freight moved on the line
6. Foreign Direct Investment (FDI) into Asset Creation

In addition to already time tested **Railway SPV Model for operationally viable & bankable sanctioned Railways Projects.**

Further, as part of the new 2014 PPP policy, the new policy framework allowed PPP in several other areas such as Suburban Corridors, Mass Rapid Transport System, High-Speed Trains, Dedicated Freight Lines, Rolling Stock,

Train Sets, Locomotives, etc., Railway Electrification, Signalling Systems, Freight and Passengers Terminals, Industrial Parks.

To achieve the ministry of Indian Railways has formulated the PPP investment models and policy framework for its existing shelf of projects and upcoming developmental projects along with time tested SPV model of Railways.

1. SPV Model for operationally viable & bankable sanctioned railways projects

SPV models are usually applicable for approved projects such as New Line or Gauge Conversion projects having identifiable stakeholders either as a user of the line or utilities such as mines, exporters, ports, plans, and state governments. Bankability of the projects can be improvised thru' financial Structuring (such as debt/grants)

Project Structuring and development will be done by IR or its PSU through consulting firms to formalize project design, costs, land requirements, and project bankability. Indian Railways perform the Risk Assessment (identification of risks and mitigation measures) and plan the Financial Structuring for the bankable project. The land acquisition shall be accounted for either by IR at SPV's cost or by SPV itself as per mutual agreement. Ownership of land shall entrust with railways. The land shall be provided to SPV on the annuity token lease of ₹1.00 for the entire concession period. In the case of Gauge Conversion projects, Railway land as available required for the project will be made available on lease or license at a token rental/fee of ₹1.00 per year.

Funding Revenue model and Selection of Equity Partners Financial participation shall be encouraged through equity participation in the SPV. The SPV shall be a (JV) joint venture with Indian Railways as a partner or its PSU holding 26 percent equity shares. The selection process undergoes thru' transparent expression of Interest and equity allocation criteria. The debt shall be raised through Project finance w/o The commercial staff of Indian Railways shall gather revenue from the project operation by the commercial

staff of Indian Railways. As per inter-Railway Financial Adjustment, as cited in IR finance code volume-I, the SPV's revenue stream shall be formalized thru' revenue distribution from freight operation for the project line length. No Revenue apportionment of passenger revenues shall be shared with SPV. SPV will provide free access to Indian Railways passenger trains.

According to the provisions of the Railway's Act, 1989, the SPV shall be granted tariff-freedom over the project line with standard IR freight rates/tariffs applicability. However, inflated tariffs to improve the project's bankability must be approved by the Railway board in not all but specific projects.

Project Construction shall be accounted for by SPV. The SPV can choose to entrust the construction activity to Indian railways or its PSU or agencies via Construction Agreement as per extant policy rules.

Project Maintenance shall be managed by either the SPV or by Indian Railways thru' an O&M agreement. In the case of the project, maintenance is borne by SPV, then the final certification & supervision will be done by Indian railways. SPV will make the rendering charges/ payment for certification & supervision to Indian Railways.

Concession Period Around 30 years of operation or attainment of the paycheck of equity invested at a discount rate of 7% above the rate on ten years G-sec predominant at the time of agreement formation, whichever is earlier, after which the project shall revert to Railways.

Risk assessment and Mitigation Rolling stock availability & traffic guarantee shall be signed-off wherever applicable in such securities are forthcoming to mitigate demand risk.

2. Non-Government Railway Model (NGR - PPP)

This Model will be applicable to first and last-mile connectivity projects at either end of the rail transportation chain to manage goods traffic for multiple consignees or consignors. It is valid for the Transportation of any goods traffic

and does not preclude passenger trains running. The rail network will be developed on private land & it will be a non-government rail project. These railways will be operated on a common carrier principle for the public transport of passenger & goods.

Project Structuring and development will be handled by the project developer to establish project cost, land requirement & rest of the project component requirements. The project report gets evaluated by Indian Railways considering the operation required for the traffic anticipated for the rail-network.

Project funding & Land acquisition: It foresees a financial investment of the project proponent for providing first & last mile connectivity under an agreement with the Ministry of Railways (MoR) either independently or as a joint venture (JV) with infrastructure development and financing bodies. Generally, funds shall get mobilized by the project proponent w/o any involvement by the railways. Land for the project shall be acquired by project developers to develop connectivity with the main railway network. Railway land shall be made available on a lease/license basis according to extant policy.

Construction: The non-government railway entity will undertake the project's construction either thru' private agencies or thru' railways as exceptional deposit work as per policy rules.

Maintenance: The non-government railway entity shall take maintenance of the project assets to care under the supervision and certification of Zonal Railways guided by IR standards on payment of supervision charges. Non-government may also choose to delegate the Maintenance to Indian railways by signing the O&M Agreement. The project developer shall undertake the technological up-gradation, renewal of assets, capacity expansion at its own cost following the guidelines by Indian Railways Standards.

Operations & Revenue Model Indian Railways shall be permitted to run one pair of passenger trains with free/open access to infrastructure. Non-

government railways consent is mandatory if Indian railways wish to introduce more passenger services. In that case, Indian railways need to share the revenues and bear passenger services' operational expenses. Revenue model – As per Inter Railway finance adjustment provided for under para 869 of IR's Finance Code volume-I net cost of operation & other fees/charges, the freight revenue will be collected by Indian Railways and apportioned to the non-government railways. The value of operations shall be computed in terms of fixed & variable costs. Fixed costs include essential commercial and operational resources require to operate the project. Variable costs include fuel/energy, rolling stock usage, crew, and so on. A concession fee of 5% of gross apportioned revenue and other charges such as demurrage on wagons at terminals operated by the non-government entity shall also be recovered.

Concession period As the project is on private land. The assets are utterly private infrastructure. They shall transfer to Indian railways in case of violations of specified terms of the agreement or mutual consent at such terms as may be mutually agreed upon.

3. Rail Projects on BOT awarded through competitive bidding (Build-Operate-Transfer)

The BOT (BUILD OPERATE TRANSFER) model shall apply to sanctioned railway projects where it is not possible to identify the strategic investor who can lead in making considerable investments in the projects. The projects under the BOT model are generally long rail corridor projects carrying traffic generated from various streams. Such projects could be either newline or gauge conversion or dedicated freight corridors. In the absence of strategic investors, investors' selection shall be performed via a competitive bidding process. The selected investor or concessionaire will design, develop, finance, operate/maintain and transfer the railway project at the end of the concession period.

Project development preparation of DPR, formulizing financial feasibility & bankability shall be performed by the Ministry of Railways (MOR) or Zonal Railway by involving consultants to sanction the project.

Design, Build, Finance, Maintain & Transfer (DBFMT) Concession

The concessionaire shall be responsible for design and develop/build the project under the performance parameters specified by the Ministry of Railways (MOR). The statutory design approvals shall be availed from CRS or IR or the concerned Zonal railway authorities within a specific timeframe. The responsibility of Land requirement and acquisition cost for the project will be borne by the Indian Railways. The land ownership lies with zonal railways. It shall be provided to the concessionaire on lease/license.

Revenue Sharing The Concessionaire's net payable revenues shall be fixed at 50 percent of the gross apportioned income. Apportioned revenue for the project shall be calculated according to Inter Railway Financial Adjustment & 50 percent of the amount shall be deducted towards operational outlays. Irrespective of trains' actual running, train chargeable to the route as per routing indicated in the Railway Receipt (RR) shall be considered for appointment.

Construction & maintenance The Concessionaire's project development and construction shall be performed under mandatory certification and supervision from Indian Railways. The concessionaire can utilize its agency for construction development, shall bear Maintenance of the project line's Maintenance to make it rail worthy, including renewal and replacement of assets according to Indian Railways standards. IR will complete the necessary certification & supervision on payment of stipulated charges.

Concession Period Around 25 years of operation shall be freeze for the concession period. The concession period will be subject to upward and downward revision depending on shortfall or excess of traffic materialization vis-à-vis the threshold traffic. The threshold defined at 80 percent of the total traffic to be carried out during the concession period, articulated in terms of

million-ton kilometers on the target date, 20 years after signing the agreement. For every shortfall of 5 percent, the concession period gets extended by one year and vice versa. Also, the concession period shall not be more than 30 years and less than 20 years.

4. Connectivity funded for Multi-Users lines, by the Users itself

The single-user rail connectivity to mines and plants is provided under the private siding policy. Such a policy is essential where the length of the rail connectivity is long, and the cost of construction is on the higher side that it cannot be loaded to the main facility/project. The industry recognizes that such single-user connectivity cannot be provided either by the railways with existing funds or by availing commercial returns to investors. Much such longer connectivity has a significant potential to become multi-user facilities in the future with the development of other industries, mining, and so on.

Project Development, Funding, Construction Maintenance, and Operations

The project development is on the lines of the Non-Government Railway Model. Indian Railways standards being followed by project developers will develop, construct, and maintain the project. Indian Railways operate the project, collect the freight and pay 50 percent of the apportioned earning calculated in terms of Inter Railway Financial Adjustment as compensation to the original developer till the estimated cost of the project sanctioned by Indian Railways at the time of implementation of the agreement is recovered.

Indian Railways have full rights to provide the new rail connectivity taking off from the project line or provide sidings from the project line. The New entrants to borne the cost burden of the new connectivity lines that include technical up-gradation, modifications to stations, or yards. The Interest of the original customers of the non-government railway for freight movement will be protected.

5. Capacity Augmentation with funding provided by customers

The model discourses multiple line projects where few customers are beneficiaries of the capacity addition and may be interested in funding the speedy commissioning project.

Project Development, Funding, Construction Maintenance, and Operations

The project will be vetted as a railway project based on an Agreement/MoU between Indian railways and customers willing to fund the project in full or part. It will be developed/constructed, operated, and maintained by Indian Railways. The project ownership, its operation & maintenance shall remain with IR. IR, in return, will pay 7 percent of the amount invested thru' freight rebate in freight volumes every year for 30 years or till the funds provided by the project beneficiary is recovered whichever is earlier.

6. Capacity Augmentation – Annuity Model

The annuity model applies to vetted/sanctioned multi-line projects where it may not be possible to find funding from any specific user.

Project Development, Funding, Construction Maintenance, and Operations

Indian Railways shall be responsible for project formulation, DPR, final location survey, and so on. To avail of an indicative assessment to the prospective bidders for due diligence, the viability report would be documented by a consulting firm. IR will be accountable for finalizing Signal interlocking plans, Engineering scale plans, and technical standards and specifications. Indian railways shall be responsible for land requirement fulfillment, acquisition, and migrating the structures to the extent necessary.

Nature of Design-Build and transfer Concession & Selection Process of Concessionaire Under the guidelines specified in the agreement, the concession would be availed for financing and construction under the supervision of Indian Railways. IR will provide certification of construction as per the Agreement clause.

Indian Railways will manage the train operations & maintenance that includes management of stations, signals, level crossing gates, running of trains, section controls, and so on. After the Construction completion certificate is furnished by Concessionaire, Non-Interlocking (NI) activities prior operationalization of multiple project lines shall be commenced within the stipulated timeframe. Under the supervision of Indian railways, Non-interlocking (NI) shall be performed.

Revenue Model The annuity shall be determined through the competitive bidding process; the concessionaire would be paid thru' annuity for a limited pre-determined period. Annuity payments will be budgeted & delivered on a committed basis.

7. Modified Design-Build (Turnkey) Contracts

A public investor contracts with a private investor to design, build/develop a complete facility following specified performance standards as per agreement. The private investor shall be responsible for building the facility for a fixed price & risk assessment. In a turnkey project, the private agency shall not be bound by conventional public sector procurement regulations and follows fast Track design-build construction techniques to complete the project facility. The fast track construction methods enable the private agency to complete the project in significantly less time and competitive costs. Public or private partners shall manage finance and ownership as per the agreement. The supervision and certification shall be governed by Indian Railways.

For conciseness, The PPP model type and different roles borne by each party are completely different from each part of the contract. For example, annuity versus normal BOT/DBFOT – the Operation & Maintenance costs borne by the party and the duration of time the concession is allowed. In the case of BOT, if the actual traffic materialization is different from the project, in case of an annuity, the concession period gets extended. In contrast, in the case of Normal, Railways will bear 80% of the TAC charges in the normal period gets paid to insulate the developer from losses. The example projects for the same are enunciated in the following table 1.

8. Foreign Direct Investment (FDI).

Under the “Make In India” campaign, the Indian government has allowed 100 % Foreign Direct Investment in Indian Railways. Some of the major reasons for the encouragement of FDI in Indian Railways are,

- To bring modern technology in the field of locomotives
- To ensure efficient operation of technology over the product life cycle.
- Reduction of inefficiencies in operations due to breakdowns and improving operations.
- Government mediation for a smooth transfer of knowledge and technology to effectively deal with obsolescence
- Also, to form a financially viable solution for the replacement of expensive spares to address the post-warranty failures.

As stated above, and also looking into consideration some of the key challenges of the FDI model, MOR has entered into a JV with Alstom Manufacturing India Ltd. FDI amounted to INR 13 Billion. The JV included procurement and maintenance of the locomotives. The deal includes the design and manufacture of a minimum of 1000 locomotives with 12,000 Hp capacity using IGBT technology over 13 years. The JV also included a deal of maintenance of the first 250 for the entire span of 13 years and the remaining 250 for four years. Training and education of the operators regarding the maintenance of locomotives are also under the private player. Though the traditional TOT model served reasonably well, the major drawback remained the lack of adoption of new and efficient technologies available in the locomotives. Also, difficulties in ramping up of productivity due to the presence of an enormous number of sub-component suppliers.

JV with Alstom Manufacturing India Ltd has enabled IR to create an Indigenized environment for a sustainable replacement of production of the locomotives of the latest technologies along with cost-effective maintenance. However, an effective pricing model is required to handle such huge Public-Private partnership JV’s. Request for Qualification was used to shortlist the

bidders, and a “single bid parameter pricing mechanism” was used. This methodology includes a system in which locomotives are indigenously manufactured at a certain base price, and all other costs such as maintenance, spares .etc are calculated on the basic price. Efficiency loss reduction as a parameter of base price over the years is also calculated. To cater to the increasing Year on Year cost of the locomotive, learning curve methods are incorporated.

However, the role of IR, the state, and the central government is critical for a successful FDI project. Proactive measures needed to be taken to mitigate the obstacles and strive for improving ease of doing business by proving all the necessary permits in all fields such as land, labor, facilities, etc.

The comparison of all these PPP Models and SPV on how they differ each other on different aspects is presented in the below table.

Data Sources for the Comparison Table are:

1. Department of Economic Affairs, Ministry of Finance Website https://www.pppinindia.gov.in/infrastructureindia/
2. PPP Projects on Railways have been taken from the Design Search.
3. Website of Rail Vikas nigam Limited (RVNL) , https://www.rvnl.org/en/pages/home.aspx
4. Website of Indian Railways Construction Organization, https://ircon.org/index.php?lang=en
5. Website of Dedicated Freight Corridors Corporation of India Limited

Comparison of Different PPP Models - Types, Roles of Stakeholders & Example Projects

Model	Period of CA	Private Party- Role	MOR – Role	Revenue	Example
NGR	No concession No transfer of Rail System to IR	Finance, Land Acquisition, Construction, O&M, Traffic Risk, etc.	Train operations, Provision of Reserved Services	IR pays Track Access Charge to NGR in perpetuity	1. Mundra – NGR with 3% of Apportioned Revenue + 60% of rest Revenue sharing with IR. The private party gets Rest 40%. 2. Dhamra – NGR with 5% of A/Revenue + 30% of the rest of Rev. Sharing with IR, and 70% for Private Party.
SPV	The concession period depends on the Actual Model of PPP.	Finance, Land Acquisition, Construction, O&M, Traffic Risk	Train operations, Provision of Reserved Services	IR pays Track access Charges or Commission Charges.	1. RVNL as Govt. shareholder a. Hassan-Mangalore for GC of 293 km line in Karnataka, b. Dahej-Baruch for GC of 52 km line in Gujarat c. Krishnapattnam Port connectivity in Andhra Pradesh d. Angul-Sukinda new line as alternate route in Orissa 2. IRCON 51%: RLDA 49% – SPV of Indian Railway Station Development Corporation (IRSDC)

					3. DFCCIL as SPV of Indian Railways
JV	30 years	Finance, land (in the name of IR), Construction, O&M, Traffic Risk, etc.	Train operations, Provision of Reserved Services	IR pays Track Access Charge to JV	4. PRCL (Pipapav Rail) – JV with 70% revenue share for Railways – 30% for Private Party 5. IRCON, SECL & Govt of Chhattisgarh- Two Rail Corridors of 230 km in Chhattisgarh 6. RITES, PCM & Shapoorji- 130 km Bhuj- Nalia new line in Gujarat
BOT	25 years subject to actual traffic materialization	Construction, O&M along with performance security to meet KPIs	Provide ROW. All sanctions may Provide VGF	IR pays TAC to the BOT operator. Also gives assurance of 80% of TAC in the loss of revenue.	1. Kutch Railway for GC of 300 km line from Palanpur to Gandhidham in Gujarat, for 32 years. Started operation in December 2006. 2. Jaigarh Digni Rail Limited Construction of Digni-Jaigarh Port Railway Line in the length of 33.70 km in Ratnagiri – for 30 years under DBFOT. 3. Haridaspur-Paradip port new line connecting port (for 30 years with RVNL) under BOOT model construction finished in 31.12.2016.
User Funded	Based on Traffic volume	Funding for the last mile railway line	Construction, O&M	7% rebate on freight charges to the	1. NTPC funded Hotgi-Kudgi (134 km) Doubling project for 946 Crores (2016)

				developer for a specific period	
BOT-Annuity	Till the Cost recovery	Funding and Construction	Land Acquisition and O&M services	Annuity payment through competitive bidding	3 Projects have been identified for the same. Those are developing the third line between 1. Nagpur – Wardha 2. Kazipet – Balharsha 3. Bhadrak – Nergundi
FDI	100% FDI is allowed in railways	The concessionaire will be free to establish SPV and bring FDI	Assessment of technical and financial viability	IR to pay the cost of services/products based on competitive bidding	1. MOR (26%) – Alstom (74%) JV at Madhepura, Bihar – manufacturing & supply of 800 electric locomotives over 11 years (20000 Cr) in 2015. 2. MOR (26%) – GE (74%) JV at Marhowra, Bihar – manufacturing & supply of 1000 diesel locomotives over 11 years (10000 Cr) in 2015.

Data Sources for the same are presented before the Table for Reference.

Achievements & Challenges faced by IR under PPP

DEA under MOF to improve the awareness and to create the knowledge database on different types of PPP Models among various government key personnel and to prepare the private sector organizations have initiated the creation of one website with the name **https://www.pppinindia.gov.in/infrastructureindia**. The said website acts as a knowledge bank for modeling the PPP project, awareness tool for up-to-date policies of Public-private partnership of the Government of India. This database has the entire data of government investments taken place under the infrastructure sector from Independence across different modes of investments.

The last 20 years' investment into Railways, of which 97% is only from traditional Procurement wherein the Government of India has provided the Budgetary Support. Railways over the years have created organizations like IRFC, IRCON, RITES, DFCCIL, CONCOR, RVNL, RAILTEL, IRCTC, RLDA, IRSDC, etc. for the specific purpose of Railway associated functions. They have either got loans to construct projects or provided Railways/ Railway organizations their expertise or finance to meet the requirements of Railways. However, these PPP figures are muted because most of the projects are done under the Special purpose vehicle (SPV mode). The examples being DFCCIL, CONCOR, other RVNL partnered enterprise, IRSDC is these models. Even all of them added, those figures are still muted comparatively what some other sectors in India have attracted investments under PPP and Private modes.

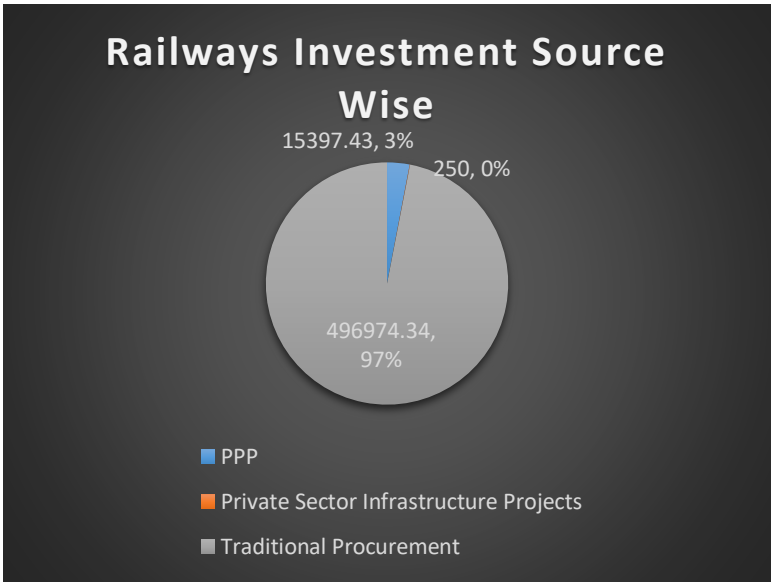


Figure 2 Source: https://www.pppinindia.gov.in/infrastructureindia/home

Challenges Faced in PPP promotion in Railways

Some of the reasons analyzed by the experts and CAG as part of the performance audit of PPP on Railway PPP projects are the following.

1. Most of the projects under PPP are sanctioned/approved based on case to case viability. That leaves too much subjectivity/discretion with the Railways and the feeling of unfairness with the developer. The same thing can be observed in Table 1, depicting examples of different modes of PPP.
2. The Zonal and Divisional administration shows a lackadaisical attitude towards these projects and the problems of the Developers. Different departments often work in silos and obstruct the smooth functioning of the same.
3. The Model Concessionaire agreement for different aspects of Asset construction has been prepared only very recently. There used to be no such document, hence often developer feels shortchanged, and the bureaucrat becomes too circumspect.
4. Lack of the Regulator to take discretionary decisions such as fix the price, the share of revenues between different stakeholders, the exceptional events on Traffic non-fulfillment and over fulfillment, etc. And the absence of Dispute Settlement bodies also hindered their performance.
5. EPC is the preferred PPP Contract mode wherein the huge number of time and cost overruns take place. And often, the vendors with no great technology but the ability to manage Railway administration are generally the interested parties in such scenarios.
6. In Railway, PPP projects are often driven by the PSUs such as CONCOR, RVNL, IRCON, RITES, etc. Being the corporate which are publicly listed companies, they often tend not to take risks in very long gestation, traffic revenue variable projects. Further, they act rather than decision followers rather than policy setter.

The ability to get huge investments to fulfill the above plan of action can only be done through by right choice of the PPP policies. For the same, Indian

Railways is in the process of giving greater scope for private players to invest in the Railway Sector. Hence, it is crucial to understand the investment pattern in different sectors of infrastructure in India.

Infrastructure investments in India – A Summary

Over the last seven decades of Independence, the Government of India has invested vast sums of money in infrastructure. The Source of data on figures in this section has been derived from the search database of Infrastructure.gov.in website of the Department of Economic Affairs and synthesized for presentation. The history of the infrastructure investment in India can be seen from the following graph.

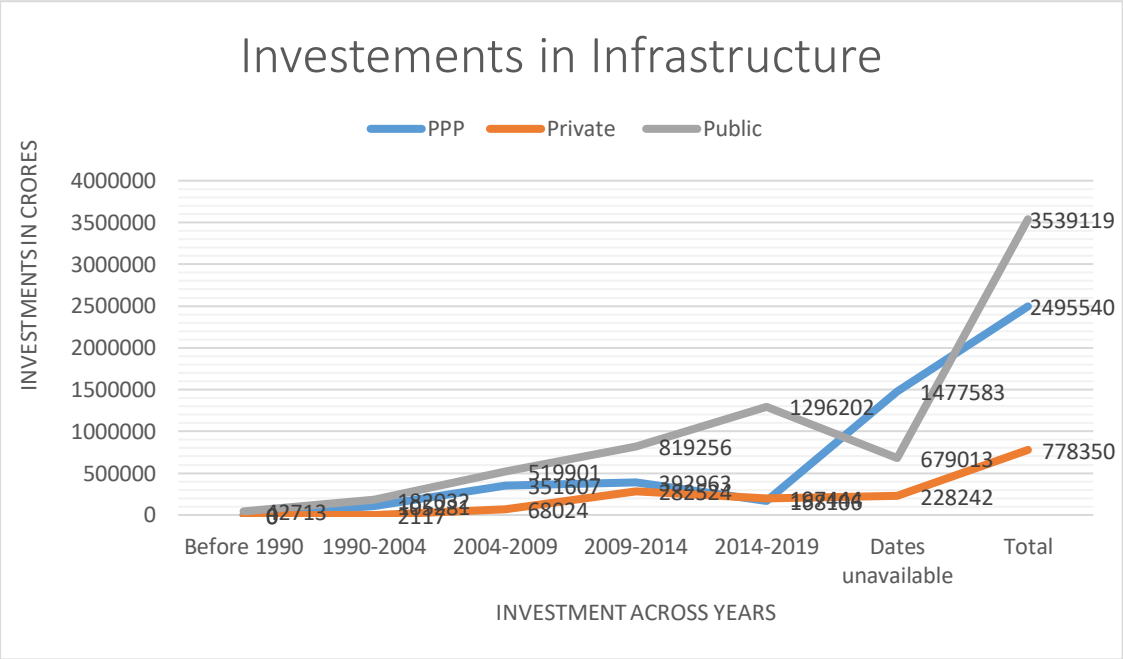


Figure 2 - Investments in Infrastructure - Source: https://www.pppinindia.gov.in/infrastructureindia/home

It can be gauged from the above that out of the total infrastructure investments of 68 lakh Crores. Central Government infused investments is about 52% and is decreasing year on year as a percentage because of the developing country constraints on high social sector needs. In comparison, the public-private partnership (PPP) amounts to about 37% of the total infrastructure funding and is increasing its share over the years very fast. Moreover, the Private funded Infrastructure amounts to be about 12% of total

investments. The increasing share of PPP and Private in Infrastructure indicates the increasing maturity and ability of the Private Sector to take up more and complex engineering and social infrastructure projects in India.

With the help of the same data, we have analyzed these different types of investments entered into different Sectors of Infrastructures in India. The following graphical chart depicts the infrastructure created in different sectors/sub-sectors of the economy. As per our scope, we have restricted our analysis to the top 10 infrastructure sub-sectors.

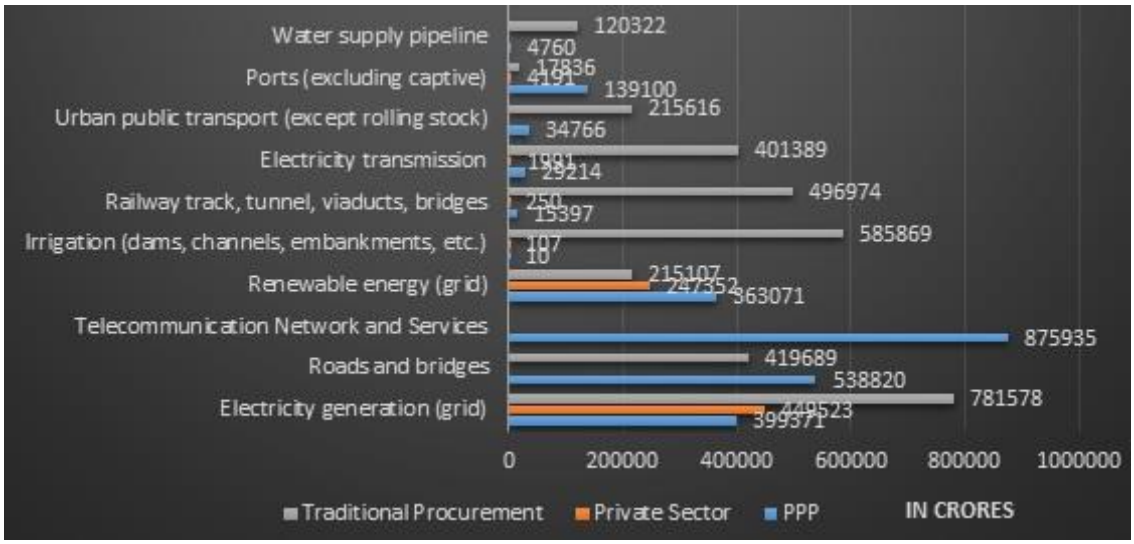


Figure 3 - The Top 10 sector investment wise. Source: https://www.pppinindia.gov.in/infrastructureindia/home

The following points can be gauged from the above graph.

1. Power Sector – Distribution, Generation, and Transmission have attracted the maximum investments led by the apt reforms taken at every level. It attracted 16+ Lakh crores.
2. Road Sector – attracted investments to the tune of 10+ Lakh Crores with the majority coming from PPP.
3. Telecom Network – attracted investments to the tune of 8.75+ Lakh Crores with the entire amount coming from PPP. Over the past twenty years, India has enhanced the coverage ratio and made cellphones easily accessible to the common man.
4. Irrigation (5.85+ Lakh Cr) and Railways (4.95+ Lakh Cr) – attracted investments majorly from the Government sector.

However, at this point, to match other countries such as the USA, China, and ASEAN countries, the Government of India needs to put in almost 50 lakh crores of infrastructure investment into Rail infrastructure, keeping because of its beneficial economics. Such humongous can't be borne by the government alone more so because of the huge social infrastructure that needs to be met by India. Hence the way we structure PPP policies in Railway Infrastructure goes a long way in fulfilling our objectives. For further analysis, we need to look at how other successful sectors to attract higher amounts of the PPP and Private investments framed their policies.

By the past data on PPP attraction of the different sectors, it appears that Power and Road sectors are the best in taking care of all stakeholders' interests of PPP. The performance comparison between PPP models of Railways and Roadways can be seen below.

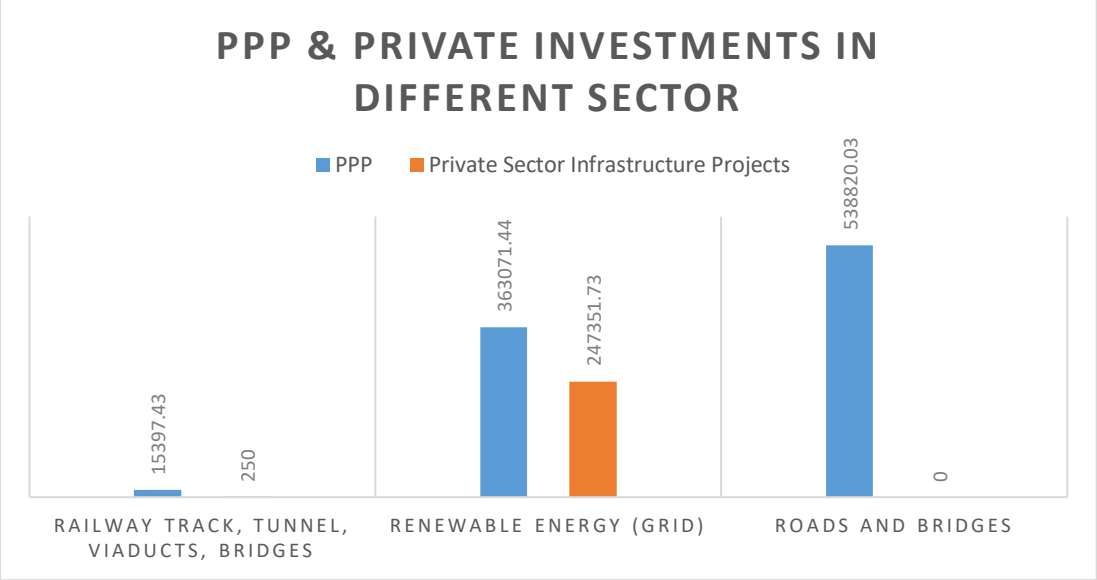


Figure 4 PPP & Private Investments across Different Sectors Source: Source: https://www.pppinindia.gov.in/infrastructureindia/home

The above chart depicts that Railways was not able to attract investments from Private and PPP way modes as much as renewable energy and Road Sectors. But Railways was always looking inward or towards the government

for the investments, and PPP policy is not attractive enough to attract investors.

As part of the study on PPP Models in Railways, Power, and Road Sectors, the comparison between different aspects is given as below.

The policy comparison between Power, Road ways and Railway s Sectors

The policy difference between Power, Railways and Roadways sectors are enumerated in the following table.

Description	Power Sector	Road Sector	Railways
Reforms Taken up Different levels	1. The entire sector is unbundled from Generation, Transmission, and Distribution. 2. Though Concurrent subject, States have controlled Generation & Distribution. 3. GoI drives investments through NTPC, NHPC, Nuclear Power Corporation for Generation, and PGCIL for Transmission. 4. Generation is in totality liberalized. 5. Generally, technology-neutral as long as the Power plants and Transmission lines follow the Standards given by CEA.	1. The policymaking execution is unbundled. Where in the Ministry of Transport will take care of the policy? 2. NHAI will execute the policies act as a coordinator for various initiatives. 3. The entire Road construction is effectively PPP driven. 4. Concurrent subject – emphasis on Larger Roads by the Center and others by States. 5. Applied transparent methods to Standards notification and facilitation of the PPP contracts	1. Entire policy making, execution is centralized. Execution tends to happen through either one of its subsidiaries or the construction organization. 2. Zonal construction wings take up the construction based on government funding / internal accruals. 3. RDSO is supposed to be the specifications provider for all the technology involved in Railways. But rather, they restricted themselves to Vendor approval rather than notifying the standards.
Preferred way of procurement **& Standards Creation**	1. All the projects are set up, and the PPA can be obtained from the Regulator if the demand exists. 2. PPA has driven – in both public sectors and private sectors. 3. State governments have taken the lead to promote Renewable energy by devising favorable policies.	1. BOT, BOT(toll), etc. are preferred ways of contract. 2. Very innovative in coming up with guidelines on **INVITs** to release the investments to sponsors to develop more projects.	Created SPVs / Subsidiaries – 1. IRFC to raise funds to finance Rolling Stocks. 2. CONCOR to fund ICD/CFTs and Cold Chain infrastructure. 3. DFCCIL to create Dedicated Freight Corridors. So far, EPC is the preferred contact mode.

Presence of MCA	Model Concessionaire Agreement for all modes- Generation, Distribution, and Transmission readily available.	Model Concessionaire Agreement available	NO MCA was finalized until recently. Only after the 2014 policy. Every PPP approval is on a case by case basis.
Data Analysis and Investment proposals.	The investments are no longer Political driven; it is generally driven by the needs and private sector driven by the use of analytics.	More detailed studies on data analysis lead to the better economic profitability of projects. The definite time frame for 'financial close,' better monitoring.	Investment decision making so far has been political driven hence saddled with a huge number of projects with little allocations till 2014. Data analysis should be key for future investment decision.
Monitoring Mechanism	The responsibility of Financial Closure and Construction is with Private Party. PPA comes into play after Commercial Operationalization Date (COD).	More streamlined approach for the formation of SPV'S & signing of the requisite agreement in a time-bound manner.	Poor monitoring at the zonal & railway board level, More delays with several cost & time overrun as per CAG's report.
Innovations to Exit and Trade	1. The Creation of Power Exchange is one reason for the proliferation of Merchant Power Plants. 2. The INVIT mechanism made Developers raise resources for further investments.	3. The invite mechanism made developers raise resources for further investments. Example – IRB Infrastructure INVIT.	No Such mechanism except unconnected policy such as PFT policy, Own your wagon schemes, PPP policy of NGR, JVs, etc. There is no possibility of the exit for investors, which leads to lesser efficient utilization of investments.

Table 2: Comparison of Policies of Power, Road, and Railways Sector

Further, the renewable energy sector was able to get the maximum despite being the latest entry technology because of the presence of Regulators and exceptionally MCA. In this scenario, In case of any dispute between Developers and Government agencies, the developer can approach Regulator, Appellate Tribunal, and Supreme Court. Generally, the dispute gets resolved in six months at each level up to the NCLAT level.

Way Forward for Indian Railways PPP Policies

After the study of Successes in Power and Road sectors, the Ministry of Railways needs to strategize certain key areas to drive the PPP policy that will help the necessary investments required.

1. MoR needs to come up with the PPP policy. It should also institute a Regulator, appellate tribunals to resolve the disputes. In the case of Railways, it is crucial because traditionally, the departments act in silos.
2. The MoR needs to come up with the Model Concessionaire Agreement (MCA) for each of the variety of asset generation to take care of all the stakeholders. Ministry of Railways has to develop different kinds of assets such as Stations, New Railway Tracks to increase connectivity, Dedicated Freight Corridors, Doubling of Lines, Electrification Projects, Cold Chain development, ICDs – each of them should have a separate MCA.
3. Key performance indicators (KPIs) for all the zonal railways need to be given such a way that – number of KMs constructed, number of ICD/CFTs, number of Railway Lands developed, number of Sidings constructed, number of stations improved - only through Public-Private Partnership method should get better weightage for their promotions.
4. The top-performing bureaucrats such as GMs should head these PPP projects and Subsidiary Companies rather than being aspired to be General Managers of Open line Railways by incentivizing them with greater bonuses.

5. RDSO should restrict itself to notification of Standards as done by the CEA for the power sector and not confine itself to Vendor approvals. Railway Board should only be restricted to policymaking, and operational requirements and KPIs should be with Zonal Railways fully with the help of MoU with clear KPIs framed.
6. The Creation of Exchanges for Track Access, Rolling Stock Access, Access to ICDs, Good sheds, etc. It requires intelligent policymaking on the part of Indian Railways as done in the case of power and shipping sectors.
7. The exit for already investors/developers is key for higher investments into the sector, it calls for the creation of guidelines for Real Estate Investment Trusts (REITs), and Infrastructure Investment Trusts (INVITs) need to be in place by the Ministry of Railways.

It is very important to bring the animal spirits of the Indian economy into the play in the direction of Railway Infrastructure If we were to bring in the massive loads of investments to the tune of 50 Lakh Crores Rupees into Railway infrastructure to compete with other developing and advanced economies of the World.

Annexure 1 - Different PPP Terms, Models, and Examples

1. Service Contract - A model of Public-Private partnership where the private promoter performs a particular O&M function for a fee over a stipulated period; the extent of privatization is very low in this model. **CASE STUDY**: Emergency Ambulance service scheme in Tamil Nadu.

2. Rehabilitate - Operate - Maintain - Transfer (ROMT) - It is a form of contractual Agreement wherein an existing facility is turned over to the private sector to refurbish, operate, maintain for a specified franchise period. The legal title is returned to the Government at the end of the contracting term. **CASE STUDY**: India's Sports revitalization Action Plan to develop High-performance training centers.

3. Operation Management and Development Agreement (OMDA) - A PPP contractual agreement wherein the ownership of the asset remains with the Government and the private promoter's responsibility include develop, finance, design, construct, modernize, operate and maintain the asset along with complete possession of the asset. **CASE STUDY**: Delhi and Mumbai Airports.

4. Input based Distribution Franchisee Model (IBDF): It is a leasing model, a public entity leases assets to a private party, and the private party takes care of operation and Maintenance. The private players are invited to bid and pay a license for a specific activity; the bidder with the highest input rate is given the franchise. **CASE STUDY**: Examples of TATA POWER in Delhi.

5. Build - Own - Operate (BOO): A project delivery mechanism in which a government entity sells to a private-sector agency the right to construct a project according to pre-defined design specifications and to operate the project for a stipulated time. Unlike the (BOOT) or the (BOT) structure, the private-sector party owns the project and operates independently; shall not require to transfer it to the government entity at the end of the term. **CASE STUDY**: **Kutch and Pipavav Railways** in India (joint venture BOO projects);

6. **Management Contract: (O&M)** Management contracts and Operation and Maintenance (O&M) contracts are contracts governing a type of public-private partnership (PPP) agreement. In this PPP model, the private Contractor has

responsibility for an entire range, i.e., investment, operation, and maintenance functions, along with the authority to make day to day decisions under a profit-sharing / fixed fee arrangement. The ownership of the asset typically remains with the public entity.

Operation and maintenance agreements may have more outputs or performance requirements. O&M with an expansion that includes limited investments for restoration or expansion of the facility. Such a mode has been adopted in the power and water distribution sectors. **CASE STUDY**: Rajiv Gandhi Super Speciality hospital (Raichur), JV of GOVT of Karnataka, and Apollo hospitals group.

7. Build - Lease - Transfer (BLT) - The private developer shall mainly responsible for the build and maintenance of the facilities together with operational activities consisting of support services. The Government will qualify as the tenant during the "lease" term and shall be responsible for running the main operations. **CASE STUDY:** Health campuses in Turkey.

8. Build - Own – Lease - Transfer(BOLT): It is an unconventional procurement approach of project financing whereby a private or public sector agency gives a concession to a private entity to build, own, and lease the facility to the agency, later the lease period transfer the ownership of the facility to the client. Accordingly, the BOLT developer owns all the risks of project financing and the construction period. The O&M responsibility for the facility is the developers, as they own the facility until the lease period ends.

9. Build -Transfer - Lease (BTL): Involves building an asset by the private promoter, transferring it to the Government, and leasing it back by the private developer. Here the private partner provides the service and collects user charges. Ownership of the asset belongs to the public entity.

10. Lease: A variation of the PPP concession model, wherein investment and financing of the infrastructure assets is the accountability of the public entity and not the private entity. This type of contractual PPP suitable in situations where assets have already been build. The commercial risk continues, will be assigned to the private party, and the contract period is often limited than in the case of a concession

(in general between 10 and 18 years). **CASE STUDY:** Leasing of retail outlets at railway stations by INDIAN RAILWAYS.

11. Operate - maintain - share - transfer (OMST): Under this model of PPP basis, the primary objective is to outsource the Operation and Maintenance of the road to a private entity for a definite concession period. The basic principles of OMT are similar to the Build, Operate, and Transfer Toll model (BOT-Toll) with construction, operation & Maintenance. Tolling of the highway was reduced to merely operation & Maintenance and Tolling of the highway. **CASE STUDY:** National Highways Authority of India projects.

12. Design-Build Operate (DBO): A form of PPP to initiate private financing wherein a single contractor is responsible for the design, construction, operations, and management for some time. It is different from the earlier PPP models where the client appoints consultants to design and contractors to build. A great deal of risk is taken up by the private promoter to be a single entity.

13. Design-Build - Operate –Transfer (DBOT): In a Design-Build-Operate (DBO) Project, the public sector owns and finances the construction of new assets. The private sector designs, build, and operate the assets to meet certainly agreed outputs. The Operator is attracting minimal or no financing risk on the capital and will be paid an amount for the design-build of the plant, payable in installments on completion of construction markers, and then an operating fee for the operational period.

15. Design-Build -Finance -Transfer (DBFT): is a Public-Private Partnership Model that permits a single contractor with proficiency in design, development, and finance to be appointed to task for the project works. This is inline/similar to Design Build Finance Operate (DBFO), except that the private promoter eventually transfers ownership of the back to the Government. DBFT can be attractive to some clients, as it designates a single point of responsibility for delivering the project.

16. Design-Build-Own-Operate-Transfer (DBOOT): In this model, the Private partner has the responsibility for construction and operations. Ownership lies during the duration of the concession. The Private entity bears the risks related to Construction, Safety, operation, among others, before transferring it to the

Government. The Public entity repays the Concessionaire based on construction cost, operation, and agreed margin. **Case Study:** Many Greenfield minor port concessions in Gujarat are on a DBOOT basis.

Annuity Models:

17. **Build-Operate-Transfer (BOT) Annuity -** BOT (Annuity) is a PPP model where the private entity is paid a fixed Annuity (Annual or Semi-annual) by the Granting authority compensate for the expenses related to Construction, Operation, Maintenance, and returns on works and thereon. Risks Related to the entire project life cycle to construction to the operation are assumed by a Private entity, whereas the Government is responsible for land acquisition, Permissions, etc. **Case Study**: Alandur Sewerage Project by Alandur Municipality and the Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL).

18. **Design-Build-Finance-Operate-Maintain-Transfer (DBFOMT) Annuity -** In this PPP model, the granting authority selects the Concessionaire through a competitive bidding process. The Concessionaire is paid upfront (40-50% during the construction period) and is responsible for raising the remaining Financial capital for construction and O&M activities through the combination of debt and equity. The Concessionaire recovers the investment via semi-annuity and lump sum payment as agreed. The Concessionaire is fully responsible for design, performance responsibility and associated risks, quality works during construction as well as to oversee Maintenance and safety during the concession period. This model provides equal risk sharing on both the entity, scope to choose the type of finance based on IRR, a free hand to design and execute and have pre terms capital arrangements with MFIs. **Case Studies:** Many Highway Upgradation in the State of Karnataka and Gujrat is being carried on the DBFOMT-Annuity model.

19. **Design-Build-Finance-Operate-Transfer (DBFOT) Annuity -** As the name suggests, the Concessionaire has to take up the responsibility from design to construction to financing the project and all associated risk. The concession period is fixed from the appointed date, and it comprises construction and operations period and thus reduces the operations period if there is a delay in the

achievement of provisional commercial operations date (PCOD) directly impacting the annuities for Recovery of investment. **Case Studies:** Suitable for brownfield projects like 4 and 6 lanes of highways where it is easy to project operating revenues before entering the annuity mode of Recovery of investment.

20. **Design-Build-Operate-Transfer (DBOT) Annuity -** In this Authority, finances the project cost. A private entity builds the facility and operates on a concession. After the concession period for Operations & Maintenance, the facility is transferred to the Government. In this model, the Government bears the financial risk while the private Concessionaire bears the construction risk. This is most suitable for low viability but highly strategic projects like rural electrification, Green energy projects, etc. ***Case Study*:** municipal solid waste-based power unit in Patna district.

21. **Hybrid Annuity Mode (HAM) -** This PPP model is a combination of BOT-Annuity and EPC. The Government pays the Concessionaire 40% of the construction cost, and the remaining 60 % has to be raised by the Private entity in the form of equity or loan basis. The concession period includes a fixed operational period of 15 years for the developers but no right on revenue collection. The investment recovery is assured via annuities linked to the performance and value of assets created. The advantage of HAM is that it gives enough liquidity to the developer, and the Government shares the financial risk. While the private entity continues to bear the risks for construction and Maintenance, he is required only to bear the financing risk partly. **Case Study:** Many Greenfield, high capital intensive Highway projects are financed and developed through the HAM PPP model

Build-Operate-Transfer (BOT) Models

22. **Build-Operate-Transfer (BOT) -** In this conventional PPP model, the Private entity is solely responsible for financing, building, and operating to recover investment and earn revenue during the contract period (which is long term 25-30 years) before transferring the project to the authorities. Both the Financial Risk and Construction risk is with the private entity. The model is much suited

for projects with high IRR, but with a long gestation period and increased capital cost, the conventional route is not much preferred nowadays.

23. **Build-Operate-Transfer (BOT) (T+ A) -** It is similar to classic BOT with the addition of Toll and annuity for Recovery and revenue. The Concessionaire bears the execution risk, operating risk, event risk, the stability of cash flows, forex risk but is compensated by Government on an annuity basis post transfer of the project. Thus revenue risk is taken care of by the authorities.

24. **Build-Operate-Transfer (BOT) Toll -** In this toll-based BOT model, a road developer constructs the road infrastructure, & is permissible to recover his investment through toll collection. Toll collection shall cover nearly 30 years period. At the end of period, the project is transferred to the Government. Thus the Private entity bears all the risks from execution to operating and revenue generation.

25. **Build-Own-Operate-Manage (BOOM) –** Build-Own-Operate-Maintain is a project with complete ownership of private entity to design, operate and manage the project in stipulated timeframe. This benefit of this model is that the Government is free of Execution, Repairs, and Maintenance risk. In contrast, the Contractor has the scope of innovation and a certain level of control over the process. It is best suited for specific projects which involved high domain knowledge expertise like Nuclear Power plants.

26. **Build-Own-Operate-Share-Transfer (BOOST) -** It's a PPP agreement whereby a concessionaire is allowed to finance, construct, own, operate and maintain, share revenue and transfer of project at the end of the period. The private entity is allowed to recover expenses accordingly.**Case Studies -** Airports SPVs MIAL, DIAL closely works on this model.

27. **Build-Own-Operate-Transfer (BOOT) -** A BOOT structure differs from BOT in that the private entity owns the works. During the concession period, the private company owns and operates the facility with the prime goal of recovering the costs of investment and Maintenance while trying to achieve a higher margin on the project. This model is highly successful in the E-Governance project in the country like the Passport Seva Kendra, Central Processing unit of Income-tax.

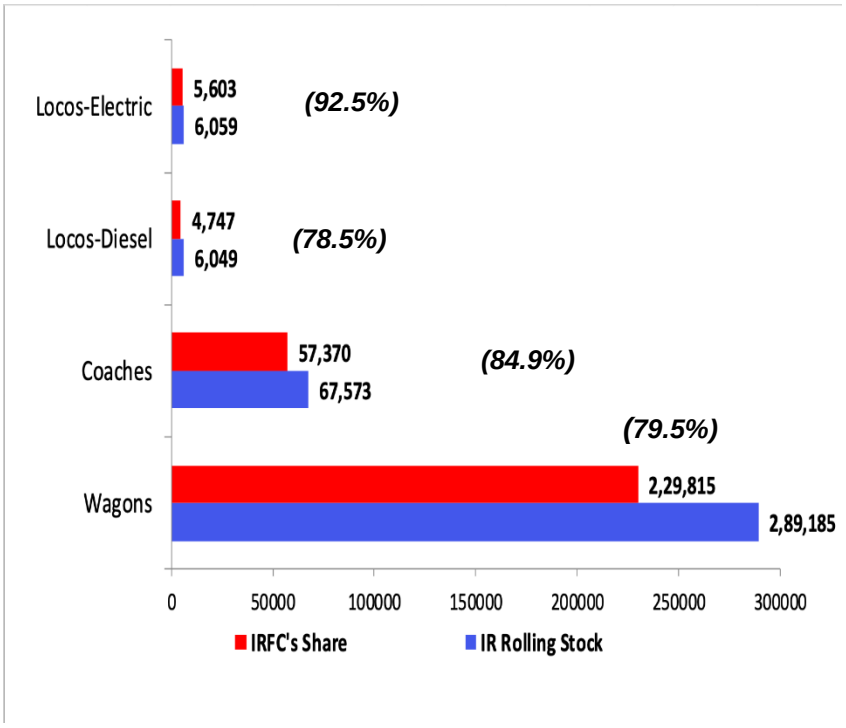
28. Design-Build-Finance-Operate (DBFO) - In this PPP model, the Contractor solely bears the Execution, Financial, Operational, Management, and Safety risks, among others. The Government may or may not fund the project during its execution stage. The Concessionaire operates the completed infrastructure for a fixed amount of time. When it operates the infrastructure, the private party earns income from the project to recoup its investment. After the fixed tenure expires, the project reverts to Government. **Case study**: London Channel Tunnel is built on this model.

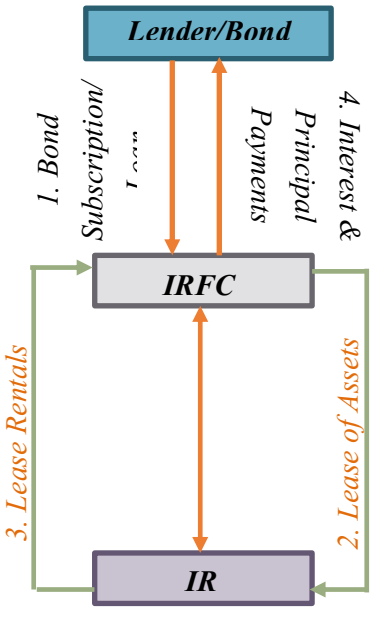
29. Design-Build-Finance-Operate-Transfer (DBFOT) - The Concessionaire in this PPP model has all the above-discussed risks like construction, financing, operation, and safety, including the Revenue generation risks before transferring the project back to the Government. After which Government is not liable to pay any annuity of compensation any recovery loss. Brownfield and low-cost projects are taken up under this model.

30. **Design-Build-Finance-Operate-Transfer (DBFOT) Toll -** The Concessionaire entering this PPP model has to bear all the risks, including the revenue generation via Tolling until the concession agreement before transferring the collection rights to the Government. Recovery under this mode is purely based on the traffic projection and thus have an element of recovery risk. It's the most common model used in Greenfield highways development projects. **Case Study:** Nava Sheva International Container terminal, Hyderabad Metro

Annexure 2 - Indian Railways Finance Corporation

Indian Railways Finance Corporation (IRFC) has been set up in 1986 as PSU 100% owned by the Government of India. It acts as the only borrowing arm for Indian Railways is under the administrative control of the Ministry of Railways (MOR). It was notified as Public Financial Institution (PFI) under the Companies Act and registered as NBFC-IFC (Infrastructure Finance Company) with RBI. It has a strategic and unique relationship with MOR being the single client and sole owner until recently. Only after 2016, the board resolutions have allowed IRFC to fund all other modes of Railway projects as well (most importantly those funded by State Governments or in JV with State Governments). As seen below, as in 2019 FY, more than 80% of Wagons, Coaches, and Locos of IR are funded by IRFC. The relationship between the IR and IRFC can be depicted in the following diagram on the right.





STRUCTURE & PROCESS FLOW

Principles of Relationship between IR and IRFC

1. IRFC possess legal ownership of the rolling stock assets, which are leased to MoR/IR. MoR can effectively use and maintains them throughout their life.
2. The Lease period of 30 years. After 30 years, assets are handed over to IR.
3. In the primary lease period (which is the first 15 years) – Full Recovery of Principle and Interest will be made.
4. Every year, IRFC enters into a standard lease agreement with IR.
5. IRR of the lease includes a mutually agreed mark-up over the marginal cost of borrowing (which is 40 basis points at present.)
6. The outstanding borrowings of Indian Railways to IRFC stands at about 2.63 Lakh crore as of 31.03.2020.

Recently started the project funding model towards other Railway PSUs such as IRCON, RLDA, RVNL, RailTel, KRCL, PRCL, and other Rly JVs, etc. There is a significant business requirement for these Railway entities in terms of – Loan syndication for Railway entities, Consultancy in the Railway Sector, Guarantee/Credit Enhancement, Export Credit to Railway Entities, Railway Project Financing – State JVs/PPPs, Bill Discounting of Railways JVs/PSEs receivables. IRFC has a huge role to play in the Railway Sector, just like PFC and REC has done for the power sector, especially in this new era of impending Public-private policy project explosion.

Annexure 3 – Railway Land Development Authority (RLDA) & Indian Railways Station Development Company (IRSDC)

Rail Land Development Authority (RLDA) is a statutory Authority, under the Ministry of Railways, set-up by an Amendment to the Railways Act, 1989, for development of Railway Land as entrusted by the Central Government for commercial use for the purpose of generating revenue by non-tariff measures. As per one estimate, Indian Railways owns up 4.77 lakh hectare of land.

RLDA along with its SPVs and JVs were incorporated with focussed attention on commercial exploitation on Railway land via PPP mode to bring about international standards and amenities for the passenger, sound financial strategy for cost cutting and revenue generation and cutting edge technology for optimum utilization of resources.

Functions of RLDA

1. **Commercial Development of Vacant Railway Land**- RLDA has identified 112 sites for commercial development in 2017-2018 of which 59 has been entrusted for development in 2018-2019. It has enabled the organisation to earn 82.81 crs net earnings.
2. **Construction of Multifunctional Complexes (MFCs)** - Since 2009 RLDA via its Lease Premium and fixed Annual Lease Rent model had leased land for 35-40 years to PSUs (IRCON, RVNL) for development of MFCs having passenger amenities like Low cost hotels, Waiting lounge, ATMs and banking facility among others. Over 20 MFCs have been handed over to the concern division for commercial operations
3. **Station Redevelopment** - IRSDC has been entrusted 12 stations for redevelopment of which Habibganj and Gomtinagar Station is under progress. Tenders has been finalized for redevelopment of Puducherry(SR), Charbagh(NER), Nellore(SCR).
4. **COLONY REDEVELOPMENT** – To facilitate better facilities for Railway employees and do commercial exploitation of land as well especially in metro cities.

Indian Railway Station Development Corporation (IRSDC)

IRSDC has the been incorporated as a joint venture between IRCON and RLDA with the aim to provide world class facilities to Railway passengers by redeveloping Stations with World class infrastructure and facilities. At present about 12 stations are already handed over to the Private operators for better management of the facilities. IRSDC is supposed to develop about 100 stations in the public private partnership model to the world class standard.

Annexure 4 – Summary on Dedicated Freight Corridors for Development of India

Ministry of Railways has established Dedicated Freight Corridors Corporation of India Limited (DFCCIL) as a special purpose vehicle for construction, operation, and Maintenance of dedicated freight corridors between the four metropolitan cities of Delhi, Mumbai, Chennai, and Howrah and its Diagonals. It was observed that though with a route length of 16%, they cater for 52% of the passenger traffic and 58% of revenue earning freight traffic of IR. The line capacity utilization between these sections over-saturated often leads to huge congestion delays for freight trains. After incorporating in 2006, DFCCIL has come up with the project reports for two DFCs. Eastern and Western and initiated the construction in the direction of the erstwhile Planning Commission and presented Niti Aayog.

Though the projects were approved in 2008, real project implementation started with the approval of the first loan for construction works in WDFC and EDFC in March 2010 & October 2011, respectively. The worldwide slowdown and delays in the land acquisition are the principal reasons for the delay. With the directions of the Ministry of Finance and PMO, WDFC is being funded by the Japan Investment Corporation Agency (JICA), and the World Bank funds a major part of EDFC. The small portions of the EDFC section are being tried for PPP to come up with comprehensive guidelines for future dedicated freight corridors (DFC) of the other four lines.

DFCs are the Game changers for Indian Railways

Indian Railways, especially in Freight transport, was lacking in multiple fronts because of the choking of infrastructure such as – non-timely delivery of the goods/freight, which leads to the higher inventory, thereby leading to the non-competitiveness of the Indian industry, lack of handling and shipping of intermodal facilities leading to low container movement and loosing of the parcel business to the other modes of transport. It would be a game-changer for the following reasons.

1. Decongestion of major highways - One freight train of DFC equals 1300 standard Truckload of freight.

2. Released capacity on IR available for - Augmentation and speeding up passenger services, giving opportunities for Private train operators.
3. Strengthening "Make in India" Initiatives - By improving logistics and creating ancillary Rail equipment industry for DFC/Railway
4. Development of industrial hubs - DMICDC on Western Corridor, Industrial Corridor from Amritsar-Dankuni on Eastern Corridor.

Project Costs and Vision

To kick start the process of competing with other Asian countries and China in terms of export competitiveness and to bring in efficiencies in the Logistics of Export-import Goods, the Government of India has initiated the projects of Western and Eastern Dedicated Freight Corridors. Indian Railways, with the help of the Government of India, wants to provide the most efficient, timely, and economic transport of the containers, bulk goods from the ports of JNPT, and Haldia has proposed the DPRs with the following project costs.

Project Cost	**WDFC (1504 km)**	**EDFC (1318 km)**	**Total (in Rs. Crores)**
Civil works	25312	16009	41321
Electrical works	4278	2980	7258
S&T	3110	1993	5103
Mechanical	160	160	320
Total Hard Cost	**32860**	**21142**	**54002**
Soft cost*	**13858**	**5531**	**19389**
Total cost	**46718**	**26673**	**73391**
Land cost	4383	3685	8068
Grand Total	**51101**	**30358**	**81459**

*Figure 5 The project Cost of DFCCIL Corridors - *Escalation, Insurance/tax, Contingency, IDC, etc*

Sources of Funds and the role of MFI

JICA was funding the WDFC, and the World Bank was funding the EDFC, respectively. The same was facilitated by the Department of External Assistance of Finance Ministry.

World Bank Funding of EDFC

Section		KM	Loan Amount (in Million US$)	Loan Agreement Date
EDFC-1	Khurja-Bhaupur Khurja-Dadri	343 46	550	27-Oct-11
EDFC-2	Bhaupur-MGS	402	910	11-Dec-14
EDFC-3	Ludhiana-Khurja	401	650	21-Oct-16
Total		**1192**	**2,110**	

Figure 6World Bank Loan dates and amounts for EDFC

WB Loan Terms

- Interest Rate- Six month Variable Index (2.86) + Spread (0.59) 3.45% for EDFC-I & EDFC-II and (Spread 0.79) 3.65 % for EDFC-III.
- Tenure- 7 years moratorium for principal and 15 years repayment period after that (Total 22 Years). Half-yearly Interest and principal repayment, i.e., on May 15 & November 15 each year.
- Front End Fee payable @ 0.25% of the loan amount
- EDFC-1 loan is through GOI/MoR, and loan proceeds go to MOF. EDFC-II & III are direct loans to DFCCIL against GOI Guarantee Fee (GF). As per GFR provisions, the rate of GF is 1.2% on outstanding loans on March 31 of each year.
- Commitment Charges @0.25% on undrawn loan on the payment date, i.e., May 15 & November 15, applicable only for EDFC-III loan.
- Foreign currency risk is with DFCCIL

JICA Funding of WDFC

Phase	Section (Billion yen)	KM	Loan amount	tranche	Tranche Loan	Date of Agreement
I	Rewari-Vadodara	947	273	1	90.2	31-Mar-10
				2	103.6	31-Mar-16
II	Vadodara-JNPT	430	296	1	136.1	28-Mar-13

	Rewari-Dadri	127				
TOTAL		**1504**	**569**		**329.9**	

Figure 7 JICA Loan Dates and amounts for WDFC

JICA Loan Terms

- All loans for the WDFC project are signed by DEA with JICA and passed to MOR/DFCCIL as GBS @ Interest Rate of 0.1% p.a.
- Tenure- 10 years moratorium for Interest and 30 years for interest payment after that (Total 40 Years).
- No Foreign currency risk on DFCCIL in the present arrangement of 7% interest payment. There is no principal repayment for DFCCIL.

Commentary on Track Access Charges

Track Access Charges (TAC) are the source of revenue for DFCCIL, wherein the IR will pay the user charges for utilizing the Track. The Broad principles have been established various types of costs is given below.

1. **Operating & Maintenance Costs** - covers fixed & Variable Cost on operation and Maintenance covering workforce cost, material, Maintenance, operations, administration & other overheads. The payments will be done for the First Year as projected by DFCCIL, and for the second year, it will be cross-checked with actual audited accounts. However, within two years, a benchmarking study to determine standard costs and indexation for the future will be established.
2. **Depreciation Cost –** The Concept of Advance depreciation is utilized. The higher of cash required towards repayment of loan or depreciation as provided for in accounts will be paid to DFCCIL
3. **Land Lease charges -** @ Rs. 1 for annum.
4. **Interest on Loan -** All costs incurred on debt servicing accounted for in books of accounts as per GAAP.
5. **Return on Equity –** NIL as long as IR is the sole user. In multiple operator regimes adequate ROE, actual land lease charges, Interest on Working Capital will be built in TAC.
6. **Working Capital –** Revolving Advance will be provided by IR.

7. **TAC** will be calculated on phase-wise/corridor wise and will be submitted by Price Water Coopers Consultants.

Sample calculation of Track access charges of Bhapur – Khurja Section (343 Kms)

It was decided this particular section may be constructed using the PPP model because of the lack of additional resources with the Government and also to come out with the lessons to go for Large scale PPP in DFCs. The revenues of freight projected are at about 2000 Crores per annum on average for IR. DFCCIL estimates the sample track access charges during the proposal stage.

Annual Fixed Costs (in Rs Crs)	**DFCC**	**PPP**
Maintenance of Assets @5%	323	323
Manpower Costs -no. of staff 720x12 lac per annum.	86	86
Depreciation of Assets @5% of cost	323	323
Annual payment of Interest of loan of 3914 Crs.	234 (@6%)	391 (@10%)
Total Annual fixed costs	966	1127
Annual Variable Costs		
Traction charges and miscellaneous material @15%	140	140
Total operation & maintenance cost	1106	1227
Return on equity of 197 Crs	107 (@6%)	195 (@10%)
Total Track Access Charges per Year	1223 Crs	1454 Crs.

Figure 8 Sample Track access charges of Bhapur - Khurja Section of EDFC

Future DFCs of India

Western DFC has revised the target date of completion of December 2021, and Eastern DFC has revised the target date of completion of June 2022 as per the latest information on their website. This leaves the other three DFCs of the East-West corridor (Kolkata – Mumbai), North-South Corridor (Delhi – Chennai), East Coast Corridor (Kharagpur – Vijayawada). As per the RITES project appreciation costs, the DPR costs of them are presented below.

Corridor	**Km**	**Projected Traffic in 2041-42 (MT)**	**Completion Cost (Rs Crores)**
East-West Corridor (Kolkata–Mumbai)	2328	**1410**	1,60,959
North-South Corridor (Delhi-Chennai)	2327	**962**	1,67,062
East Coast Corridor (Kharagpur-Vijayawada)	1114	**1192**	74,750
Total	**5769**	**3564**	**4,02,771**

Such humongous investments of close to 55-60 Billion US $s obviously may not be funded by the Government of India through Budgetary support alone in the times of huge fiscal deficits of India. The Ministry of Railways have two options of either going for multi-lateral agency loans or unleashing the PPP modes such. All the experiments of IR should help us achieve the same through appropriate policies. Success/failure of the same will alter the fortunes of IR substantially in the future to come.

Annexure – 5 Indian Railways – The policy on running of Private Train.

Indian railways are embarking on a new way of a partnership with Private entities by allowing them to run private trains on 109 designated routes. The logical question that follows is

Why open the door for Private Players?

Indians on the move is the new norm. Either it is for the daily commute or business or fun, railways continued to lose its shine due to less reliability, questionable safety, and unwelcoming onboard facilities, giving an edge to other means of transport like roads and air. Though Indian Railways initiated projects to address these concerns, lack of investment served as a big hindrance. As per Union Budget 2019, it is estimated that Railways need a minimum of Rs. Fifty lakh crores for various plans and policies.

Secondly, there is always a visible demand and supply gap in the form of waiting lists and overcrowded trains and sometimes gap widening up to 13-15% in festive and peak seasons. As dedicated freight corridors (DFC) are expected to commence from Dec 2021, Government felt like monetizing the opportunity immediately. Resultant free capacity on busy routes due to the movement of 70% freight trains to DFCs is planned to be given to private operators to serve the public better and bring much-needed investment into railway infrastructure and operations. Hence the way designed for private Entry in train operations hitherto the monopoly of Indian Railways, especially in the passenger segment.

Lessons Learnt from other countries in private train operations:

As we started the process formally allowing private train operations, it is necessary to look at the lessons learned by similar experiments in other nations. It looks that India is taking the path laid by Britain, first allowing the private running of trains and then moving to infrastructure, Maintenance, and so on.

Experiences in U.K, France, Argentina, or the U.S show that: National monopoly should not be replaced by private monopoly, and hence reasonable

regulation, especially on safety, standards, and fares, is necessary. It should not lead to the bankruptcy of private operators forcing governments to renationalize it. Domestic experience in privatizing freight operations through containers couldn't yield many results, and analysis of the same is necessary to avoid similar mistakes. Corporatization models like in Germany, then privatization should also be considered and analyzed.

Experience of Tejas: Flight on Rail

As per reports, in its first month of operations, Tejas could earn Rs. Seventy lakhs profit and earn revenue of Rs. 3.7 crores. It could run on an average occupancy rate of 80-85%. Daily operations showed an expenditure of Rs. 14 lakhs against revenue of Rs. 17.5 lakhs with a clear profit of Rs. 3.5 lakhs on an average. This serves as a boost for private trains. If the operators can generate similar revenues, the policy becomes sustainable and paves the way for further privatization. Now Indian Railways face the limitation of low fares, and it became a loss-making venture with a loss of Rs.37,000 crores in 2016-17. This initiative could be a major turnaround for railways as a whole.

Eligibility criteria for Entry

After conducting two pre-bid conferences with private parties, the recently Government called for bids for Entry. Entities would be selected on a two-stage process – Request for Qualification (RFQ) and Request for Proposal (RFP). Many companies like Bombardier India, Alstom, Talgo, Tata Realty, IRCTC, and Gateway Rail Freight had shown Interest in the offer.

Eligibility criteria are defined in terms of financial as well as technical capacity. Financial capacity is fixed at a minimum of Rs. 450 crores net worth at the close of the preceding year, and to demonstrate technical capacity, they should have received amounts of Rs. 2,700 crores over the past five financial years from eligible projects.

RFQ also speaks about safety standards. Operators should adopt as per approved norms. Punctuality, reliability, and maintenance quality to continue the operations and the penalties they are to pay in case of a breach.

Price Determination:

As per the Project Information memorandum of Railways, private operators are given the freedom to determine the fares to be charged from passengers. Also, in the second pre-bid meeting, it is ruled out the creation of any regulator for control on fares given the market forces that serve as an automatic mechanism to control and fix reasonable fares. Such free hand might be necessary at the inception. However, Railways didn't rule out the possibility of the regulator in the future if situations go out of control.

It is only a hope that the step towards private passenger trains turns profitable and sustainable and helps Indian Railways to improve its operating ratio and efficiencies.

Annexure 6 – CONCOR & Policy evolution of Private Player entry into Container Business

Indian Railways as a policy of dissuaded the retail parcel/container business from 1980s. In order to bring in efficiencies in turnaround times of Rolling stock and congested track capacity, IR has started accepting only half rake/full rake of Freight from then on. That conscious decision has left huge market of single wagon/container consumers or businesses to fend themselves. Later that market has been slowly captured by the truck operators. In order to cater to that market of single container/wagon so as to promote exim trade, IR has incorporated Container Corporation of India Limited in March 1988 with humble start of 7 Inland Container Depots. (ICDs).

At present, CONCOR has about 63 ICDs and 4 subsidiaries each catering to different segment of the market.

CONCOR AIR LIMITED (CAL):

It is a wholly owned subsidiary of CONCOR and is in the business of constructing, developing, operating and maintaining the air cargo terminal at Santa Cruz Airport, Mumbai. During the FY ended 2018-19, CAL has earned gross revenues of Rs.70 crores and made profits of Rs. 3.8 lakhs. Most of their staff including Key managerial personeel is deputed from CONCOR, the holding company.

FRESH & HEALTHY ENTERPRISES LIMITED (FHEL):

FHEL is a wholly owned subsidiary. It is incorporated in 2006 to carry on cold chain business. In the FY 2018-19, it earned Rs. 61.87 laksh as gross revenue but made losses of Rs. 8.38 crores. Similary to its sister concern, FHEL also has deputed staff from CONCOR, the holding company and few contract employees.

PUNJAB LOGISTICS INFRASTRUCTURE LIMITED (PLIL):

CONCOR is a joint share holder PLIL along with a Punjab Govt enterprise. Incorporated in 2013, PLIL is engaged in setting up multi modal logistics park in Ludhiana Dist, Punjab. Its aim is to provide logistics support for both EXIM and domestic cargo. As per recent annual report, company earned Rs. 20.36 crores but made losses of Rs.11.87 crores.

SIDCUL CONCOR INFRA CO.LIMITED (SCICL):

SCICL is jointly held by CONCOR and public enterprise of Uttarakhand state Govt. It is established to develop logistics park at various vantage points in the state. Being incorporated in 2013, it earned revenues of Rs. 8.5 crores and made losses of Rs. 4.48 crores as per the recent annual report for the FY 2018-19.

Opening up of Container Operations to Private Players – 2006 policy

In the budget speech of February 2005, a fresh announcement was made for opening of container operations in India. The need was felt due to spurt in growth of imports and exports and a prospective growth rate of 15% was estimated in container operations. CONCOR, the monopoly in business was handling only 50% of total container traffic and it led to picking up of container business through road than trains. To bring efficiency and competitive nature in the business, container opertaions were opened up finally for private operators.

The stakeholders in the policy were

- CONCOR – the incumbent and the sole operator till 2005 in container business and listed subsidiary of Ministry of Railways.
- Indian Railways – The policy maker, regulator and operator through CONCOR.
- RITES – Closed group under supervision of IR to study on the proposed entry of private operators.
- Interested Parties in the policy like Central Warehousing Corporation which showed Interest in 1994.
- Railway Board

- Planning Commission – As an institution independent of Railways' influence.

In the backdrop of failure of 1994 policy, many suspicions were raised on new policy. Main question were on incumbent resistance, conflict of Interest in multiple roles donned by IR as licensor, regulator, service provider and operator. Level playing field especially with an established actor in action.

Consultations and negotiation were held with all the stakeholders to address apprehensions and final policy is evolved in 2006 with the following eligibility criteria

1. Any registered Indian public/private sector companies/persons either individually or in joint venture including Indian registered companies of foreign entities.
2. Networth of Rs. 100 crores for the operators.
3. Must have suitable access to rail linked ICD (two ICDs for domestic movement) in the hinterland or MOU with existing ICDs or develop its own within three years both for EXIM and domestic traffic.
4. They should have experience in any of the acitivities like transport, trade and commerce, infrastructure, Logistics, warehousing and so on.

The policy of Private Freight Terminals (PFT):

The PFT policy was first issued in 2010 and revised 2 years later to open up and liberalize freight operations, to bring efficiency, to bring investment for creation of infrastructure and to provide customer friendly operations at goods shed.

A PFT is private goods shed, where not just loading and unloading of goods but also other services like warehousing, packaging, door to door delivery goods etc are also provided. They deal with both general cargo and container cargo except coal, coke and iron ore.

As per 2018-19 annual report of Ministry of Railways, proposals were received for 109 PFTs and 60 are in different stages of development.

Eligibility criteria:

- Any registered Indian private or public corporate, cooperative society under the act, Joint Venture company or Consortium or an existing private siding.
- The applicant should be in the business of logistics preferably.

Recently, MOR approved hub and spoke model to encourage more PFTs and make its operations effective.

BIBLIOGRAPHY

1. Niti Aayog Report- Goods on the move, September 2018
2. Niti Aayog Report- Transforming India's Mobility, BCG Report
3. Niti Aayog- Strategy for New India @75
4. Freight Logistics and Intermodal transport- Implementation for competitiveness- Arvind Kumar, ISID, December 2014
5. Draft National Logistics Policy, Ministry of Commerce
6. Transforming the nation's logistics sector- Mckinsey
7. India- on the cusps of a logistics Revolution- Deloitte
8. Economic Survey, 2018
9. Link of the consolidated map with ICDs, DFCs, Industrial clusters: https://www.google.com/maps/d/u/0/viewer?mid=1LmI8AZtLu2HQm6faoQ3CAgVY09YmCTsN&ll=15.902430886774605%2C98.85559287798563&z=4
10. Intermodal hub-and-spoke network design: Incorporating multiple stakeholders and multi-type containers by Qiang Meng and X. Wang.
11. Planning and optimization of an intermodal hub-and-spoke network under mixed uncertainty, by Kai Yang, Lixing Yang, Ziyou Gao
12. "Modelling Intermodal Freight Transportation Promotion for Sustainable Supply Chain in India," by Aalok Kumar and A. Ramesh
13. Source - https://www.pppinindia.gov.in/
14. Source: https://rb.gy/cvcm1w
15. http://regulationbodyofknowledge.org/faq/private-public-partnerships-contracts-and-risks/what-are-the-different-types-of-ppp-arrangements/
16. https://www.designingbuildings.co.uk/wiki/Build_lease_transfer_BLT
17. https://uk.practicallaw.thomsonreuters.com/4-501-4896?transitionType=Default&contextData=(sc.Default)&firstPage=true
18. https://www.mondaq.com/india/government-contracts-procurement-ppp/898934/ppp-model-for-railways-the-viable-future-option
19. https://www.business-standard.com/budget/article/bugdet-2019-rs-50-trn-investments-in-railways-by-2030-ppp-model-allowed-119070501286_1.html

20. https://www.moneycontrol.com/news/india/policy-are-ppps-the-road-ahead-for-indian-railways-4266571.html

21. Asian Development Bank to Invest $23 Million In GR https://www.bloombergquint.com/business/adb-signs-pact-to-invest-usd-23-mn-in-ncd-of-gril

22. The public-private partnership model for the railway – the viable https://www.vantageasia.com/ppp-model-railway-future-option/

23. https://blog.ipleaders.in/brief-insight-infrastructure-sector-india/

24. Draft policy for private participation in rail connectivity and capacity augmentation projects

25. Union Budget document for FY 2019 - 20.

26. G. Ananthakrishnan, "Why have Indian Railways opened doors for private players?" The Hindu, July 05, 2020.

27. Avishek G Dastidar, "Why private firms are being invited to run trains in India, and how the model will work," The Indian Express, August 1, 2020.

28. NITI Aayog, Draft RFQ document, January 07, 2020.

29. Nishita Saluja, "Private trains have 20 companies interested in running them," The Economic Times, January 31, 2020.

30. Anisha Dutta, 'Private trains' fares to not be regulated, operators to decide' The Hindustan Times, August 31, 2020.

31. "Railways' 1st 'private' train Tejas posts Rs 70 lakh profit in the first month of ops", The Economic Times, November 11, 2019.

32. Audit Report No.1 of 2018 - Union Government (Railways). Para 1.5.1

33. Jocelyn Fernandes, "Indian Railways privatization, A look at other countries that have taken this route." Moneycontrol.com, July 03, 2020.

34. Indian Railways Institute of Financial Management (IRIFM) Class notes Database

35. Indian Railways Institute of Transport Management (IRITM) Class notes Database

36. DFCCI -https://dfccil.com/

37. Website of Concor India - https://concorindia.co.in/

38. https://www.pppinindia.gov.in/infrastructureindia/home

39. https://www.pppinindia.gov.in/

40. Annual reports of CONCOR AIR Limited for the FY 2018-19

41. Annual report of Fresh and Healthy Enterprises Limited for the FY 2018-19.

42. Annual report of Punjab Logistics Infrastructure Limited for the FY 18-19.

43. Annual report of SIDCUL CONCOR Infra Company Limited for the FY 18-19.

44. Rachna Gangwar, Sebastian Morris, Ajay Pandey, G. Raghuram, Container movement by rail in India: A review of policy evolution, June 7, 2012.

45. Container Train Operations: Introducing competition(A), IIM Ahmedabd report.

46. Rachna Gangwar, G. Raghuram, CONTAINER TRAIN OPERATORS IN INDIA: PROBLEMS AND PROSPECTS

47. Annual report of Ministry of Railways for the FY 2018-19.

48. Private Freight terminal policy document.

49. Railways: Green signal for more private funding - The Hindu BusinessLine, 05th July 2019, https://www.thehindubusinessline.com/economy/budget/green-signal-for-more-private-funding/article28297297.ece

50. Model Concession Agreement on Indian Railways Website for Public Private Partnership agreements http://www.indianrailways.gov.in/railwayboard/uploads/directorate/infra/downloads/Model_Concession_Agreement.pdf

51. Railways has undertaken PPP projects worth Rs 14,000 crore, https://economictimes.indiatimes.com/industry/transportation/railways/railways-has-undertaken-ppp-projects-worth-rs-14000-crore/articleshow/50062391.cms?from=mdr

52. Railway Subsidiaries, http://www.indianrailways.gov.in/railwayboard/uploads/directorate/stat_econ/pdf/ANNUAL_REPORT_ACCOUNTS_ENG_2011_12/25.pdf

53. https://www.thehindu.com/business/railways-to-build-3-projects-through-buildoperatetransfer-model/article8245454.ece#:~:text=The%20Indian%20Railways%20has%20identified,of%20around%20Rs%202%2C450%20crore.

54. The project status of hotgi-kudgi section of NTPC funded Railway Line under PPP, 09th September 2020, https://swr.indianrailways.gov.in/view_section.jsp?lang=0&id=0,5,1044,1209&cssType=3

55. NTPC, SWR enter pact for doubling Hotgi-Kudgi section | Business Standard News, 8th June 2016, https://www.business-standard.com/article/pti-stories/ntpc-swr-enter-pact-for-doubling-hotgi-kudgi-section-116060801006_1.html

56. Alstom-Railways JV Struggles to meet locomotive target, Economic Times News Paper, 11th November 2019, https://economictimes.indiatimes.com/industry/transportation/railways/alstom-railways-jv-struggles-to-meet-locomotive-target/articleshow/72013397.cms?from=mdr

57. PPP in Rail Infrastructure by Mr. Yogendra Sharma, IRTS, Ex-MD Kutch Railway Corporation, Source : Indian Railways Institute of Financial Management (IRIFM) Lectures Database.

58. PPP & MFI Lectures by Ms. Sharmila Chavali, IRAS, PFA, Northern Railway, Source: : Indian Railways Institute of Financial Management (IRIFM) Lectures Database.

59. Freight Corridors Lecture by Mr. Chander Mohan Jindal, IRAS, Director General, IRIFM and Ex-GGM, DFCCIL, : Indian Railways Institute of Financial Management (IRIFM) Lectures Database.

60. SINGLE NUMBER BIDDING PARAMETER: A TRANSPARENT AND COMPETITIVE APPROACH TO PPP, Ved Mani Tiwari

61. Indian Railways: Powering Through to excellence (A), Philip C. Zerrillo, Shubh Yashaswini, Case Study collection of Indian School of Business, June 22, 2020 (ISB 197)

62. Indian Railways: Powering Through to excellence (B), Philip C. Zerrillo, Shubh Yashaswini, Case Study collection of Indian School of Business, June 22, 2020 (ISB198).